

PREFACE TO VOL. XXVII.

OTHER thoughts and other pursuits have rightly commandeered the opportunities of many students of Entomology during the past season; still the study goes on and we are much indebted to those who have helped to fill our pages.

Ere another Christmas greets us may there be peace to crown the honour we cherish so dearly.

With kindly greetings to all our readers, and with the best of thanks to all our contributors, we look hopefully to the coming year with its many possibilities.

Hy. J. Turner.

VOL. XXVII.

SPECIAL INDEX.

By T. HUDSON BEARE, B.Sc., F.R.S.E., F.E.S. (Coleoptera); J. E. COLLIN, F.E.S. (Diptera); and H. J. TURNER, F.E.S. (Hemiptera, Hymenoptera, Lepidoptera, etc).

Coleoptera arranged in order of Genera. The other orders arranged by Species. Species, Genera, etc., new to Britain are marked with an Asterisk*, those new to Science with two Asterisks**.

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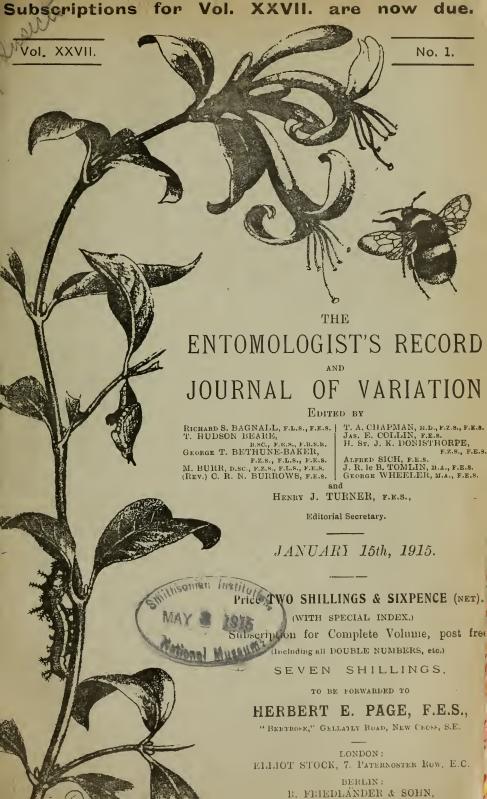
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CORRIGENDA, ETC.

(Most of the errors in the spelling of scientific names have been corrected in the Special Index.)

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page
       2, line 14, insert pyrina before aesculi.
      21, ,,
                45, etc., for pyraenella read pyrenaclla.
      23,
                 5, for atalanta read cardui.
      37,
                16, insert a comma after "river."
                41, insert "last" after "which." 53, insert "there" after "found."
      37.
      37,
      39,
                36, insert a comma after "clubs."
                48, for didyma read didymata.
      51,
      64, etc.,
                    for loweii read loëwii.
                 2, for matura read muturna.
      66, line
      79,
            " 37 & 50, for belia read tagis.
                16, for Polyommatus read Lampides.
     123,
                33, after hylas insert "and Plebeius sephyrus."
     143,
                34, for hispanica read hesperica.
     143,
     170,
                 8, read "Dasycera (Oecophora) olivierella."
                35, for atra read atrata.
     171,
           ,,
                12, for Cordiceps read Corydalis.
     187,
           , .
                20, for litura read liturata.
     219.
           ,,
     223,
                17, for Cnephasia read Aphelia.
           ,,,
                4, for "Mr. Lachlan" read "Mr. MacLachlan." 38, before griseo-aptera put Olynthocelis.
     241,
           , ,
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                21, for Andridus read Andricus.
                22, for Asphilobia put Aphilotrix.
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January 15th, 1915.

Lepidopterological Notes for 1914.

By RUSSELL JAMES.

At our editor's request, I have with some amount of trouble put together the following collecting notes on the past season. I have difficulty amidst the great happenings of the present in casting my thoughts from war news, back to the peaceful days of early summer, when the capture of Dianthoecia luteago var. barrettii, on the beach near Bude, or Leptosia (Leucophasia) sinapis in the home counties seemed matters of more importance than at the present moment. perhaps those of us, who by reason of age or responsibilities (or as in my case both) are prevented from taking active part in the war, are the better fitted for doing our share in things at home, if we obtain what measure of relaxation we can in continuing our innocent hobby.

I had intended taking my proper holiday on the West Coast of Wales-country quite new to me-but this fell through on the outbreak of war. I found it impossible to leave my business, which for a time was thoroughly disorganised, and when things partially settled into more normal ways, the holiday time had passed. So my collecting notes are limited to odd days and home work, but yet may be of interest

to beginners.

The year has certainly been a marvellous one from the weather point of view, and although treacle has failed, and no rarities have come my way, the abundance that I augured from the day spent in Surrey on May 15th, when L. sinapis was so plentiful (Ent. Rec., Vol. XXVI., p. 144), has been realised in my subsequent experiences.

With a small son coming along and showing extraordinary enthusiasm, I have had the pleasure of running over some old haunts, and one of the first of these was Hampstead Heath, where, after a lapse of many years, we spent two evenings. Considering its limited space, its proximity to London, and the trampling the heath gets by holiday crowds every week-end, it is quite remarkable the number of species that maintain their ground.

The dwarf sallow there, partly protected by the shelter of large birch trees, still carries on a precarious existence, and on these shrubs, and on the brambles and birches, most of the larvæ were obtained. The numbers were very considerable, and the commonest were certainly those of Noctua angur, closely followed by N. triangulum. N. baja, N. brunnea, N. festiva, and N. ditrapezium all occurred in small

numbers, and seven fat Triphaena fimbria taken by my boy for the first time caused great joy. Other larvæ taken were those of T. janthina, Naenia typica, Leucania impura, and Boarmia repandata. Occasional Taeniocampa gracilis, Selenia illunaria, and Panagra petraria were netted, but Pachnobia rubricosa and Larentia multistrigaria—two of the old time species—have apparently gone for ever.

Really there is quite a considerable amount of interesting work to be done almost in London itself. In my own garden (five miles from Charing Cross) we have been collecting assiduously, and the number and interest of the species taken is quite remarkable, especially for a boy beginner. There are plenty of large species, such as Amorpha populi, Mimas tiliae, and Cossus ligniperda, which last abounds in an ash tree and pupates in the rotten part of a neighbouring fence, Zenzera aesculi, Phalera bucephala, and Catocala nupta (in numbers), and the violent wriggling of a full-fed larva of the latter species caused great amusement to its finder, the third, and by no means the least ardent entomologist of the family, aged just five. The butterfly of the year in the garden has undoubtedly been Celastrina (Cyaniris) arginlus both broods plentiful. In fact, in July, it was no uncommon thing to see several at once over an ivy covered fence, which ivy affords the principal beating in the garden, and I may say gets fairly well worked —perhaps twenty times a day on an average. This ivy and the fences produce wonderful things, and I generally have an array of full boxes awaiting my inspection when I arrive home in the evening.

Among the captures of the year in this way and at light, the following are the most interesting for such a locality:—Aegeria (Sesia) myopaejormis, Myelophila cribrum, Nola cucullatella, Bryophila perla, Emmelina (Pterophorus) monodactyla, Platyptilia gonodactyla, Hypena rostralis, Pyralis costalis, Eupithecia exignata, E. assimillata, E. subfulrata, E. oblongata (centaureata), E. havorthiata (isogrammata), E. fraxinata, E. rectangulata (black vars.), Metrocampa margaritaria, Iodis lactearia, Crocallis elinguaria, Habrostola triplasia, Dipterygia pinastri, Axylia putris, Apatela aceris, Amphidasis betularia var. doubledayaria and intermediates, Hemerophila abruptaria and chocolate var., and many others. Mania maura has this year turned up in numbers. Every evening in late July they flew round commonly at dusk and were found in sheds, in the house, and on fences, and several butterflies have re-appeared after many years' absence, notably

Epinephele jurtina (janira) and Euchloë cardamines.

In August larvæ of Eupithecia assimilata and Habrostola triplasia ate some ornamental hops to shreds, and, of course, Orgyia antiqua larvæ have been in evidence. An interesting sembling experience with this last species occurred in September. I had been breeding a fresh series in a sleeve, and thought all the pupæ were removed. One, however, which remained proved to be a female. Its presence was indicated by a swarm of males in the garden, round the old sleeve, and these continued in great numbers for two whole days. They appeared fairly early in the morning and continued until nearly sunset practically without any interval. The children netted and boxed great numbers (which were afterwards liberated), but still the supply continued undiminished, until on the third day a male also emerging inside the sleeve: the attraction ceased. The only parallel in point of numbers I have seen, was in the case of a ? A. betularia, three years

ago, also in the garden. This attracted vast numbers of males for three nights, once twenty-three being on the cage together. This experience was especially interesting, as it enabled me to realise the advance of var. doubledayaria since my last attempt at sembling with the species—in 1895. On that occasion I took 77 males, all strictly typical. In 1911 the captures showed only 16 per cent. typical, 78 per cent. doubledayaria, and 12 per cent. decidedly intermediate, an extraordinary change in sixteen years.

The same reason that has led to renewed research in the garden has prompted occasional visits to the private woods in the district, especially Bishop's Wood, edging the Highgate Golf Course. The wood, I fear, is in danger, as several plots have already been bought and cleared for private houses, but at present, when standing near the 11th tee, which is some 50 yards inside the Wood, it is inconceivable that such a place should exist within five miles of Charing Cross.

In front is the open and rising ground of the Golf Course, shutting out all signs of building except where Lane's farm hides the Great North Road, and behind and around one might be in the depths of Surrey or Sussex—the wood retaining all its primitive beauty, and in early summer being carpeted with bluebells. Such species as Thyatira batis, Habrosyne (Gonophora) derasa, Drepana binaria (hamnla), Hylophila (Halias) prasinana, H. quercana, Cymatophora duplaris, Spilosoma mendica and many others still survive, and on the neighbouring golf course Odezia (Tanagra) atrata (chaerophyllata), Emmelesia albulata, and Heliaca tenebrata occur, the latter in some numbers.

A morning, May 17th, spent at Brentwood, was devoted more to spring flowers than to insects, but the extreme forwardness of the season was noticeable. Enpithecia coronata was taken from its favourite haunt—the trunks of Spanish chestnut. The spruce furs produced a few E. lariceata and E. pusillata—both nearly over. Bupalus piniaria was already out, and plenty of common Geometers. There can be no connection between E. coronata and Spanish chestnut, yet nearly all the specimens I have taken at Brentwood from time to time have

used these trunks as resting places.

The earliness of the season was still more marked during a stormy week-end spent at Wye, on June 6th and 7th, and we entirely missed Pachetra lencophaea, which had been more plentiful than usual seven to fourteen days earlier. Agriades thetis also was apparently over, as the only specimen seen was one male, worn to shreds. The ground at the foot of the chalk pit has been burned since my last visit and it was feared that Scoria lineata (dealbata) had been badly injured. I was pleased, therefore, to find it had survived, and although in diminished numbers still reasonably plentiful. It would be a thousand pities if this local and beautiful species were exterminated here, and it should be treated very tenderly for some years to come.

There has been a remarkable increase in Anthrocera trifolii. In place of the odd specimens I have been accustomed to take here, the whole hillside was swarming with them. Even during the rain they could be seen in hundreds all over the grass and the trefoil blossoms, and some lovely confluent vars. were taken. I particularly regretted that P. leucophaea was over, as never before at Wye have I seen so many moths on sugar, although it was the only time this year that I found it any good at all. Always hitherto I have had the ill-luck to

strike bright moonlight, or east winds, and my series of *P. lencophaea* must have cost me a considerable amount per head in railway fares alone. From hordes of *Agrotis exclamationis* we picked out two fine *A. cinerea* (one a female), two very large *A. puta*, several *Hadena genistae*, and *Grammesia trigammica* (trilinea) var. bilinea, but very little else of interest.

The question of the attractiveness and otherwise of treacle is very mysterious, especially as regards individual species and a curious instance occurred this night. On every previous occasion I have found the commonest species on treacle at Wye, to be G. trigrammica and Apamea basilinea (exclamationis being scarcely out before). On this occasion among the crowds of moths on the posts there was not a single basilinea, although the species was flying over the grass in some numbers both at dusk and later; G. trigrammica on the other hand was in quite its normal numbers. I have frequently noticed how certain species vary from night to night, quite out of proportion to the total numbers on the sugar, but never remember so marked an instance of this before. At dusk we failed to find Eupithecia scabiosata, (usually in fair numbers), but in its place took a very nice lot of Acidalia subscriceata, and on the way home at night took a dozen and a half full fed Eubolia cervinaria larvæ, from an isolated plant of mallow which has never yet failed to produce the species.

The weather was all against day-work, and the woods at the top of the downs were unpleasantly wet. In the course of a good long tramp, however, we took a very beautiful series of Aricia medon (agestis)—just out and settling on the grass in quantities—Plusia pulchrina at rest, Nola cristulalis, Melanippe unangulata, Spilosoma mendica and many common things that rejoiced the heart of my small companion. A visit to a distant wood for "wild Columbines" and larvæ of Porrittia galactodaetyla was very successful as regards the flowers, but curiously enough the leaves of the burdock, usually riddled to shreds by those larvæ, were quite untouched. We had no sun to induce the day-fliers and so my promises of Hamearis (Nemeobius) lucina, Callophrys rubi.

Enclidia mi, E. glyphica, etc., were almost unfulfilled. This being so, I endeavoured to make good, by utilising the school "mid-term holiday" (June 15), for a day in the old Folkestone Warren. As I have found on other occasions, things there are altogether later than at Wye. Agriades thetis, which was apparently over there, was still flying and with picking over, many good specimens were found. Hipocrita (Euchelia) jacobaeae was also still in evidence and E. glyphica was in great numbers and fresh. E. mi was rather scarcer, but to my surprise there were considerable numbers of Venilia macularia, all in beautiful condition. This species was already well out at Brentwood on May 17th. Several belated C. rubi occurred but the greatest enthusiasm was aroused by the sight and capture of two fine Arctia rillica on the wing. I think there is no other British insect that looks so gorgeous on the wing. It quite puts its fellow "tigers," even Callimorpha quadripunctaria (hera), and Colias edusa in the shade. Anthrocera filipendulae was just coming out, but did not appear to be in quite the usual numbers, very few cocoons and larvæ being seen. I remember a day twenty years ago, when one could scarcely move without treading on them. Strawberries and cream (unexpectedly discovered by the Warren "Halt") put the cap on an extremely enjoyable day amongst

brightly coloured insects and flowers. The yellow horned-poppies and the masses of bugloss in the Warren are magnificent.

At the beginning of July I revisited for a few days another old

haunt (this time alone)—the "arion" ground near Bude.

It is a long time since I have been there, and my main objective was a "bred" series of Toxocampa craccae. I have seen them there in immense numbers on the wing and at heather blossom, but the best of the captured specimens lack the rich bloom of those freshly

emerged.

I was nearly too late, and most of the larvæ were full fed. There are few things more fascinating to me than searching for larvæ by night, especially in such a situation as Toxocampa craccae haunts—right down by a rocky beach at the foot of immense cliffs. I planned my evenings to work at dusk on another beach for Dianthoecia luteago var. barrettii, and there being no way round the foot, I had to descend the cliff path in the dark. Having prospected the ground in the daytime, and located the foodplant, I arrived about 11 p.m., and succeeded in getting enough on the first evening to breed a good series.

Subsequent visits only added a few, and had I been a week later I doubt if any would have been left feeding. Judging by the appearance of the foodplants, however, they had evidently been in great numbers, as in some places the plants were reduced to mere skeletons. Passing from one beach to the other, the way leads along a sunken lane across the top of the headland, with high gorse and heather-clad banks. Both these plants were covered with moths, the most plentiful being Enpithecia pumilata and Agrotis strigula, both in great numbers.

There were also quite a fair lot of Aphomia sociella, Boarmia gemmaria, and Gnophos obscuraria about the gorse, and many common Noctuids about the heather, but the queerest experience of the night

was with a butterfly—Pyrameis cardui.

Each night I saw P. cardni very conspicuously at rest on the gorse along this lane, and was interested to note that certain bushes were favoured night after night, probably by the same individuals. On the last night as I passed along to the craceae ground at 10.30 p.m. there were three P. cardni at intervals of about twenty yards. Upon my return two hours later I looked for them and found the first one gone. The second was where I had left it, but what was my astonishment at finding the third one paired, doubtless with the missing first specimen.

There is no possibility of error in this fact, as in each case the particular position of the specimen was known to me exactly from observation of previous nights. Cardui's habit of flying late into the dusk is familiar to me, but even assuming that my strong light had unsettled them at 10.30, such a proceeding as this is, as far as I know, quite without parallel. It would be interesting to hear if others have

had a similar experience.

The weather was very unpropitious for butterflies, as whenever the sun shone it blew hard, and when it ceased to blow it rained. The exception, however, that proved the rule, came on the last morning, when, although the sun only got half through, it was so warm and still that butterflies flew freely. I had heard bad reports of Lycaena arion, and it was therefore gratifying to find it on this last day at least as plentiful, if not more so, than on the only other occasion I had previously seen it—in early July, 1901. After a lapse of thirteen

years it seems to have maintained its numbers well, and to be spread over a large area. At this comparatively late date many were in surprisingly fine condition, and I could not resist taking a few picked specimens, although I had not intended doing so. confess to a great love for butterflies, and revelled in the abundance seen on this last morning. Melanargia galathea, Hipparchia semele, and Adopaea flara (linea), with the Lycaena arion abounded all over the hillsides, and in the valleys Aphantopus hyperantus swarmed. Dryas (Argynnis) paphia and A. aglaia were just starting, the former on the brambles in the valley and the latter on the hillsides; Brenthis selene also was still hanging on, and even belated Callophrys rubi. In 1901 I took this latter species in good condition at this date, together with first brood Leptosia (Leucophasia) sinapis, although H. semele and A. aglaia were already well out. One immense mass of Vanessa io larvæ proved from the few I took to be nearly all ichneumoned. Every one pupated, but the pupa cases only contained a mass of ichneumon cocoons.

The weather was little better for night than day work, but nevertheless, a few Dianthoecia var. barrettii and D. nana (conspersa) were netted at dusk, both going over. Larvæ also of the latter were taken from the sea-campion in various stages of growth. While D. nana (conspersa) were netted at any part of the cliff where the Silene grew, the var. barrettii were all taken actually on the beach itself, where the plant grew in some quantity amongst the shingle, just above high

water mark.

Treacle, tried on two occasions, once in the wood and once on the cliffs, proved a failure, although on the cliffs some numbers of Xylophasia monoglypha were attracted. There was nothing else except one Triphaena fimbria and two Scoparia cembrae, and the wood produced nothing but one Thyatira batis and a few ordinary Boarmia repandata. A magnificent var. conversaria of the latter was seen on a head of Eupatorium on the beach whilst larva hunting, and quietly allowed itself to be boxed. Larvæ of Eupithecia pulchellata were everywhere in the foxgloves, but nearly all ichneumoned, and a few Geometers were netted and kicked up in the day time, such as Melanippe galiata, Pseudoterpna prninata (cytisavia), Eupithecia nanata and E. subfulvata, but nothing of much interest. On my way down I broke my journey at Bristol, and spent a few hours after Ptychopoda (Acidalia) holosericata. Clifton was my only guide as to its whereabouts, but there is no mistaking the spot and I found it very speedily. Many were worn, but it was in the greatest abundance, and a series was picked out. I got very wet as it rained all the time, and the only other insects seen were occasional Eubolia bipunctaria, Oxyptilus parridactyla, and Botys asinalis. It is remarkable how the species sticks to one bank only of the ravine where it occurs. Not a single specimen occurred on the other side, which I tried first, but the welcome sound of another beating-stick going gave me the hint and saved me much time.

The only other trip I had, was with my boy to Betchworth on

August 13th for Urbicola comma.

As with others, this year, we found the butterfly in more than its usual numbers—not only on the steep hillsides, but also over the long grass and scabious blossom at the foot of the downs. In some of the hollows *Vanessa io* was in great numbers, and three specimens were

netted of Nisoniades tages—two just out, and obviously of a second brood. Aspilates gilraria was commoner than I have ever before seen it, but Eubolia bipunctaria was decidedly scarce. A Noctua flying from flower to flower in the sun proved to be Cerigo matura, a habit I have

never before noticed in this species.*

Through late June and July, we had rooms at a farm near Ongar, but although I spent many of my evenings there, travelling to town each day, I had little time for Entomology. A very casual survey of the district was promising and the following is a list of the more interesting species noted; Trichiura crataegi (larvæ), Miltochrista (Calligenia) miniata, Zeuzera pyrina (aesculi) (very rare in my experience away from London), Cymatophora duplaris, Plusia pulchrina, Triaena (Acronicta) tridens, Orthosia suspecta, Cleoceris riminalis, Petilampa (Tapinostola) arcuosa, Habrostola tripartita, Cidaria silaceata, Eupithecia rectangulata (black form), Acidalia emarginata, A. imitaria, Mesoleuca (Melanthia) albicillata and Ebulea crocealis.

Diloba cacrulcocephala and Malacosoma (Bombyx) neustria larvæ were abundant, and never before have I seen so many Porthesia similis (auriflua) both in larval and perfect states. Treacle was as usual an utter failure, and the greatest attractions proved to be the grasses and sedges by the roadside and the American willow-herb in the woods. There is a most attractive-looking treacling ground in Ongar Park Wood, and I shall hope in other years to work the district more

thoroughly.

The war stopped all other work, and although I had intended compensating myself for the loss of a holiday by taking several odd week-end trips, the anxieties of the August and September campaign drove the inclination away, and I have done nothing since. Perhaps during the continuation of the war, this will be a general effect and lepidoptera consequently get a much-needed rest. If this be so, when all is finished, and we settle down again, we shall be able to claim for our own particular study, a definite good out of all the evil; and more especially so, as we have had a year of more than usual plenty as a starting-point.

"Notes on the Taxonomic Value of the Genital Armature in Lepidoptera."

By F. N. PIERCE, F.E.S.

The following critical remarks have been suggested by a paper under the above title which appeared in Part ii. of this year's *Transactions of the Entomological Society of London*, from the pen of Mr. G. T. Bethune-Baker.

The author's name is so well known amongst entomologists that any article by him carries great weight, and when I read the title "Notes on the Taxonomic value of Genital Armature in Lepidoptera," I looked forward with much pleasant expectation to the perusal of the text. Alas! I cannot say that my expectations were realised, and letters received from correspondents interested in genitalia revealed the fact that they too found themselves unable either to understand the

^{*} I noticed this habit some years ago on the railway banks at Thomastown, near Waterford.—H.J.T.

article or to make anything of the plates which accompany it. They confessed that they were completely mystified and had given up the attempt in despair. These facts have induced me to make the following critical suggestions, in the hope that they may assist future writers on this most important branch of entomological study in making their communications such as can be more easily understood by the student.

With the avowed and modest object of Mr. Bethune-Baker's paper I have, of course, no quarrel. Although perhaps it is a little belated to set out to prove the long established fact that genitalic differences in lepidoptera have both specific and generic value. One of my correspondents wrote that it was hardly worth while going through so much

to get so little.

The points I wish to deal with concern rather those matters which make the paper so difficult, or even well nigh impossible, to follow, and are these: (i) The use of photographs for the plates: (ii) the profile method of mounting the genitalia; and (iii) the employment of unrecognised names and descriptive phrases for the various parts and

organs.

never show.

(i) First, I am convinced that photography is far from being a happy method of depicting the structure of the genital organs. one thing to see the mount through the microscope and quite another to see the reproduction in the photograph. A photograph, while from one point of view showing too much, i.e., parts that have no particular significance, from another point of view conceals far more than it reveals. Even in the best photographs the superimposed masses give such a confused picture that the organs cannot be discerned, whilst many important features do not appear at all. The result is that only a very small percentage of the parts described in the text can be made out with any degree of certainty in the plate, and when, as in the article before me, an unscientific printer, whose only idea is apparently to fill up a blank space, has used every possible variation in the position of the figures, and when, moreover, the figures appear without titles, the student has to add sleight of hand to his other qualifications, for he must keep the book open at three places, whilst he twists in all directions in order to get the figure the right way up. From the point of view of instructive value there is no comparison between a photograph and a drawing. The latter reveals to the student what the master's eye can see, and whilst obscuring and unimportant parts can be omitted it is possible to present with clearness every feature and organ that is of characteristic and distinctive value. With a drawing it is possible to follow the descriptions of the text, with a photograph this can only be done in part, and that with the greatest difficulty.

(ii) In the second place I would suggest that while the method of mounting the genitalia so as to give a side view is occasionally necessary, in most cases the ventral view discloses the organs in a far more comprehensible manner. It is only necessary to lay the abdomen on its back and then turn back the enclosing valvæ to allow the student to see right into the genital cavity, with all the organs visible and the paired organs systematically arranged. A glance at the object thus mounted will reveal what it would take a very long study of the sideway mount to discover, and much more that the latter method could

(iii) In the third place, I do most earnestly deprecate the employ-

ment of unrecognised names and descriptive phrases for the various organs. It is quite impossible for even those who have had considerable apprenticeship in the study of the genitalia to recognise what organs are thus referred to. The want of uniformity in our terminology is at once unnecessary and the cause of hopeless confusion, not

only to the student but also to the advanced worker.

In this article before me I find that the names employed are for the most part not generally accepted, or they are recognised names used to denote quite other parts than they commonly signify, indeed one can only hazard a very uncertain guess as to the organs to which they refer. I select the following for comment. The Clasps fairly obviously denote the valvæ. The Tegumen apparently denotes only the dorsal part of the whole organ to which the name rightly belongs, but it also appears to include the uncus, which in the article is only obscurely alluded to. The Girdle one must conclude is used for the remainder (by far the larger part) of the tegumen. When, however, we come not only to an upper and lower girdle, but also to an inner and outer one, I confess I have to give it up. The Falces can only stand for the gnathos when the two arms of this organ are widely separated. The Dorsum and Dorsal Bridge one judged to be the uncus. The Curtain is a puzzle, but may denote the socii, whilst the Lateral Cheeks is a descriptive expression that does not seem to help much. The Fulerum evidently represents the sacculi when projecting ventrally and fused together, that is to say the furca. In addition to the use of such unrecognised names, I find forwards and backwards, front and rear, employed with the opposite of their usual significance, forwards here denoting towards the tail of the insect, backwards towards the head! Sternite and tergite occur freely regardless of the fact that no settlement has yet been attained as to what organs constitute these pieces, whilst, perhaps wisely, the question as to which segment of the body they belong is ignored. The expression, "the end segment of the abdomen proper," leaves me wondering.

Now with such a terminology it is not a matter of surprise that the student is left baffled and in despair. What can he be expected to make of this on page 316? "The girdle is erect, expanding suddenly forwards below the tegumen, which is funnel shaped, deeply excavated in front with the dorsum terminating in a blunt point. Whilst the lower part is bifid, also terminating in blunt points, below these are the falces, broad and strong, suddenly curved upwards near the tips with one or two sharp teeth near the bend; the apices of the lower part of the tegumen are furnished plentifully with bristles, but the dorsum very sparingly." Or of this again on page 320. "The general outline to end of section." Or suppose he attempts to compare the figure of Tirumala petiverana, No. 25, with the description on page 323, he can only conclude that the figure has been wrongly numbered.

Now all this incomprehensible confusion is not only sad but unnecessary. Dr. McDonnough, in the Canadian Entomologist for June, 1911, has given us a list of names which rightly belong to the different parts under the law of priority. These names are now in common use amongst workers, and I have given a list of them and others with full explanations in "The Genitalia of the Geometridæ." If only writers would adopt accepted names the progress of our study would be immensely facilitated, whilst much that is now incomprehensible to

the student would become plain. The present want of uniformity in the terminology brings the whole study of the genitalia into discredit, and daunts the hearts of many would-be students.

In making the above critical remarks I am moved only in the hope

and wish that better things are coming.

"Notes on the Taxonomic Value of the Genital Armature in Lepidoptera." A Reply.

By G. T. BETHUNE-BAKER, F.L.S., F.E.S.

Mr. Pierce's criticism of a paper of mine is interesting as a case of special pleading for his own views to be generally adopted. I fear, however, that he and I look at things from different points of view and I think I know that he is not likely to come to my point of view, whilst with my very long experience in this section of morphology, backed up as it is by some of the ablest insect anatomists on the

Continent, I am not at all likely to accept his statements.

Mr. Pierce says, "it is a little belated to set out to prove the long established fact that genitalic differences in lepidoptera have both specific and generic value." My critic's statement is true as regards many lepidopterists, but he is evidently ignorant of the fact that many do not at all believe in them and that among them will be found systematists who are really eminent to-day. This is, moreover, proved to some extent by the small number of subscribers to his volume, riz. 132, which number includes 20 copies to two publishers which have been counted as twenty subscribers. I will now consider his criticisms in his own order.

(i.) Photography. Mr. Pierce's criticism that superimposed masses give a confused picture is true: "that the organs cannot be discerned" is entirely incorrect, whilst "many important features do not appear at all" is generally speaking equally incorrect, though of course in some figures where I have wanted to bring out certain particulars it may be true that I have let them disappear in the reproduction. The real point of the photograph, however, is that it shows all the organs (under ordinary circumstances) in their proper proportion, in their proper place, and in their natural position if the profile view is taken. The drawing shows, as Mr. Pierce himself practically says "what the master's eye sees," or rather what he wants his readers to see. Mr. Pierce's own drawings convict him absolutely. Look at his books and they show in the plates the gradual change and formation of his opinions, he emphasises his views in the view he gives his readers in the figures. We see what Mr. Pierce's hand has brought prominently into view, such a prominence would not be given by photography and does not exist in the object. All the parts are co-ordinated together, and their relativity is shewn in a photograph, while it is quite decidedly absent in Mr. Pierce's drawings by hand. From the point of view of scientific value there is certainly no comparison between a photograph and a drawing.

(ii.) "The profile position." I had no intention of ever attacking Mr. Pierce's method, feeling that every man must work on his own lines—some years ago, I think, before his book on the *Noctuae* waspublished. I wrote to him pointing out the value of the profile view

and the disadvantages of the vertical spread position, but my letter was not acknowledged. I am now of course obliged to defend myself and in doing so I must ask my critic to forgive me when I say that I wholly and entirely differ from him in his view. For my own investigations I make both profile and vertical preparations and in cases of necessity I make opaque objects, when I want to see all the muscular parts, either in spirit or in balsam, but for the edification of others who know less than I do, I have no doubt whatever that the profile is the view that ought to be shewn. It is the natural position, the only position in which the various organs are to be seen co-ordinated together as the insect uses them and as they lie together quiescent in the natural condition. If it is necessary to show some of the more inaccessible organs, they are much better shown by taking off one of the clasps and still showing them in profile. This is a question that I have discussed with some of the most able continental insect morphologists and it is a satisfaction, at least to me, to know that they agree with me absolutely on the point.

(iii.) Mr. Pierce says "I do most earnestly deprecate the employment of unrecognised names and descriptive phrases." As to descriptive phrases my critic does not believe in descriptions at all. He does not describe, he trusts to his figures and in these figures his readers only see what he wants them to see. I consider a careful description is necessary, and with a photograph accompanying them no mistake need be made. I emphasise the word need as I have to

refer to this again.

Now as to unrecognised names, it would have been better had he said "names that I do not recognise" because he simply means that he desires to insist on his own terminology being generally adopted. Clasps, for instance have been in use before Mr. Pierce had begun to work and even before I had begun to work on this subject, and are

used regularly in most British periodicals.

Valvae or valves as used by Gosse are restricted to the Papilionidae and some Pieridae, but as I am writing an article on the Tegumen and on the Valves, I leave argument alone on these two words, as this rejoinder would run to too great length, suffice it to say that I do use the word 'tegumen' for what Dr. White so carefully described, viz., the dorsal part only of the organ that I subdivided with the name 'cingula' or 'girdle' years ago.

The Falces is again a name given by me some years ago, and I

think has considerable precedence to my critic's "gnathos."

The *Dorsum* is too well-known a name to need comment.

The *Porsal Bridge* is a descriptive phrase that I should have thought would have carried its own meaning even to a tyro.

Curtain and Lateral Cheeks are also descriptive phrases in precisely

the same category.

The Fulcrum I admit is a slip for the Furca named some years

ago by me.

Most assuredly forwards and backwards have no reference to the head of the insect. Does Mr. Pierce really intimate that he would suggest that it is correct to say that the adeagus is emitted backwards?! It reminds me of the Turco-Grecian war, when the Greek commander issued the notable order for his troops to advance to the rear.

This brings me to the baffled despair of Mr. Pierce and his correspondents, where he refers to my descriptions on pages 316-320 and 323. (*Trans. Ent. Soc. Lond.*, 1914).

Habrodias granus on p. 316. Had the figure (sharp in outline and simple in detail) been referred to, it is quite incomprehensible to me that any one could fail to follow the two—but then Mr. Pierce does not like descriptions.

Pseuderesia tripunctata on page 320. "The general outline.

. to the end of the section." "The general outline" is the beginning of my description—"to the end of the section" are Mr. Pierce's words to define the paragraph he refers to—I cannot for a moment imagine that Mr. Pierce did not refer to the figure 14 on Plate LIX., and yet had he done so I really cannot see how anyone with any knowledge of these organs could fail to follow the descriptions and the figure, and here I may say that the fine lateral curtain (a word complained of), is palpable in the figure, and I submit is a most useful and understandable word.

Figure 25. Tirnmala petiverana is, I admit, much less easy to follow on account of the dark masses, but nevertheless the description can be followed with the figure and is correct, but it is necessary to be careful to locate correctly the various parts.

I venture to suggest that any confusion that exists does not rest in the descriptions and figures, and that much of my critic's protest is because I do not adopt his terminology, and because I do not agree with his methods of work.

In reference to the article by my friend Dr. McDonnough I should say that Mr. Pierce himself adopts what he wishes from that paper, and ignores what he wishes; for instance, I believe that Zander's ringwall has been renamed by Mr. Pierce the Juxta or the Anellus or it may be a combination of both, but I must admit that I find it very difficult to be certain as to what is what in the many new names given by him, for we have no "figure key" given, and there are no real descriptions of the species, so that one has to try and fix the location of a name to an organ with much uncertainty, because there is no perspective in a flattened and distorted object as it appears on the plate. Again, Mr. Pierce's use of "penis" and "ædæagus" is quite contrary both to Dr. McDunnough's and Zander's use and also contrary to general custom; both of the observers use the word "penis" for the middle tube containing the ductus ejaculatorius, and I am satisfied that this is the general custom, Zander called the outside cover, which is sometimes a tube and sometimes not a tube the "penis pouch"—this Mr. Pierce ignores. The word "ædæagus" has long been in use I believe among Coleopterists and has by them been referred to as the whole organ and I should say that that signification has been very generally accepted; it appears to me that the word "penis" cannot properly be used, as it is by Mr. Pierce. In conclusion I would say that I regret that I have had to traverse considerably my critics statements. I should not have called in question any of his work willingly, but his criticisms on me have compelled it. Critiques sometimes are necessary, certainly necessary where there are errors that will not be acknowledged, but in cases such as this, where it is very largely a question of opinion and where one observer is merely advocating the adoption of his own terminology and his own method of work, they seem to me to to be rather subversive to the advancement of science than otherwise.

Every observer must work on his own lines and his work must stand or fall on its own merit. I hope in our next number to insert an article on the "Tegumen" of White and the "Valve" of Gosse.

Notes on Swiss Rhopalocera. III.

By the late Mr. A. J. FISON.

(Communicated by Miss L. M. Fison.)

Extracts from letters addressed to and kindly lent by the Rev. George Wheeler.

1900.

1. Localities for Raywardia telicanus, Lang.

"Clarens, April 24th, 1900.

"After receiving your note I tried to get the address of the two ladies who caught my telicanus in 1894. They are now near Brussels; but a letter from them does not tell all one would like to know about their catch.

They caught the butterfly on the road between Trois Torrents and and Morgins, close to the inn, which is at a corner of the road above Trois Torrents. I remember they told me it was 'with a crowd of other Blues.'

"As to the date they can only say that it was in June or July. As I see Kane gives no locality for telicanus in this country, to know

where one was found is at least interesting."

N.B.—I took several specimens of this butterfly at Charpigny, St. Triphon, Vand, early in September, 1913. It has evidently been taken there before, as Mr. Wheeler tells me 'such rarities as telicanus, bocticus, and pandora, have all been taken at Charpigny.—L. M. Fison.

2. Epinephele tithonus, L.

"Clarens, March 22nd, 1900.

"I have a note of 6 large Heaths—tithonus—taken at Charpigny, on August 4th, 1890 I only remember the 'large heath' there in summer."

3. Papilio machaon, L., etc.

"Clarens, May 5th, 1900.

"The day after we were at Charpigny I saw there (but could not catch it) a very dark machaon. It was chasing another of much lighter colour, so I could compare its hue well. A few minutes later I took a P. podalirius as white as any I have, but it had lost some of its wing. I must look out for others. On Saturday I went to Payerne and the Broye Valley to look for lerana, but found no trace of it. It might possibly haunt the other, warmer side of the valley.

"I found aurinia at Charpigny—a very dry place for it, but one

year it abounded there."

1901.

4. Scolitantides orion, Pallas, etc.

"Clarens, May 27th, 1901.

Last Monday I went to Martigny by early train. As it was too

early to look for levana I walked to Fully, and from 8.30 to 9.30 a.m. caught 21 orion, besides one baton and a 'small copper.' At times I had two orion in my net at once. I got so many because I paid little attention to the flat meadow, but took up a station by the rock (say ten yards from the path) where they were flying like bees, on the vines and plants. Perhaps one should look for orion at Bovernier in a similar place.* Crossing the valley I hunted its S. edge to Martigny, and all under En Chemin, but saw nothing of levana. From the top I looked down on La Valette and its so-called lake.

"Have seen no darker vars. of machaon at Charpigny, but have caught several which approach it, with lighter coloured eyes near tails."

Melitaea deione, Hb., var. berisalensis, Fav.

"Clarens, May 28th, 1901.

"Have been to-day to Martigny, and in the meadows below (E. of) Plan Cerisier. I got 13 berisalensis and a few other flies."

6. Lycaena arcas, Rott., etc.

"Clarens, June 11th, 1901.

"Do you remember my speaking to you once of a big marsh about one mile west of Attelens, which I wished to explore? To-day I went there, chiefly to look for flowers near by. I also thought I would look for areas, though as it is said to be found only in July, I had little idea of seeing it. I got easily down to the marsh through a wood of fine beeches, having followed a road, or track, from near Les Tuilières (S. Joigny). In the centre of the marshy part (near its few alders) I soon saw two or three undoubted areas—very perfect specimens . . . I also saw one hippothoë The sun was not out long. I hope to go to Thusis on Monday, and if I should find asteria near there should I send you some? Probably they would be abundant."

7. Localities for Lycaena areas, Rott., and Loweia amphidamas, Esp. "Clarens, June 12th, 1901.

"I went by the Baumaroche Funiculaire to Chardonne yesterday, and climbed to La Tuilière farm. There is a good road from the N.E. or E. corner of Chardonne village—steep at first—up to La Tuilière. At La Tuilière I descended about 100 yards and took a rough country road S. and then E. of it, leading straight on through woods and scrub, with endless chances of wild strawberries in the clearings. Beyond Attelens and its Church there was a wood of tall beech. In the grass below I only found one path, and returned the same way. The marshy part of short grass was narrow, and by the few alders in its centre I found areas and the Sanguisorba, on which it feeds

"To-day I took seven areas at En Saumont, say 200 yards beyond the Measured (lugeing) Mile and the Jump. This small spot is below the road, before it reaches a little wood. It is a very limited spot, and I only saw the seven areas I caught. A mile further on, on the road, I caught a lovely little Copper, with fine purple lines near the edges of both upper wings, and very yellow below, which I hope

may be dorilis var. bleuesi."

8. Butterflies around Coire and Davos.

"Coire, July 4th, 1901.

"I must tell you how I have been getting on in these parts and at Davos as to butterflies. The weather has not been good, and there was snow at Davos when I left at 7.40 yesterday morning. I had two capital days there—June 27th and July 2nd—in the Dischmathal. On the first day I took 12 maturna,* and on the second 26, also a few selene, and eriphyle, the marks on underside hindwing, in one case or more, being much like manto. I may have seven or eight, if they all

travel well to Charpigny.

"In the Fluela valley, on July 28th, amongst a lot of gorge were two var. triopes. Here yesterday I looked for aurelia, and took six. I also caught a very tattered and old fly, which looks greatly like oedipus by its spots, but the colour of underside hindwings is gone after all the late rains. P. delius I found twice, and some palaeno, though the sun was in at the best spot . . . I hope to be in the Grisons all the summer This season, at Charpigny, I only took one dark machaon before leaving, but nearly one-half I caught inclined that way, with yellower tail spots than most."

8. Coenonympha tiphon, Rott.

"Pontresina. July 22nd, 1901.

"On the whole I have been successful. My visit to Utznach, near the Lake of Zurich, was not on a good day, however, by waiting one

and a half hours in the marsh I captured four fine tiphon."

(N.B.—As the information on the remainder of this post-card, describing expeditions at Pontresina, Weesen, Brusio, Bernina Pass, and Le Prese, is identical with Mr. Fison's notes on these places already published (Ent. Record, vol. xxvi., pp. 228 and 242) it is unnecessary to communicate it again here.—L.M.F.)

9. Miscellaneous.

"Charpigny, November 29th, 1901.

"For days I have been working here to get my flies in better order. Going through some this morning I find a statement in Kane as to var. egerides (Wood Argus) which I cannot think correct, and you might like to note it. He says, 'the ? has fewer and smaller spots, much faded in colour, and apex of forewing not so pointed.' I underline the part I doubt from an examination of my set. It seems to me the ? has larger spots, and usually more.

"I should like some day to show you again the dorilis I got from Davos and Fexthal. Very black on upperside, and a bright, light yellow ground below, with small, hadsome series of spots. They are much like the fine fly you said was a southern form of transalpina ?,

only they are not so finely coloured . . .

"I have a 'Blue' taken at Pontresina, July 19th, 1901 (where there are a lot of low marshy meadows) that I cannot name, unless it is amandus. The dark apical border is not very deep, though the rays are fairly pronounced. On underside are no spots. Underside it would do well for amandus, only in Lang, on hindwing, the inner circle of large spots is evenly placed, while in mine it is distinctly wavey. The

^{*} i.e., var. wolfensbergeri.-L.M.F.

ground colour on underside is distinctly grey. The blue on upperside is rather dark. After reading Kane, I think it is really amandus, although there are only the slightest traces of peacock eyes. Spots are very round and ringed—the discoidal spots are curved, not angular as in Lang and Kane, Mine differs a little from one you gave me, the rays are less clear.

"I have recovered my 9th flavofasciata. It is a damaged 2, but

as a ? is valuable."

N.B.—With reference to localities for orion, it may be of interest to mention here that I found it at Charpigny on June 2nd this summer (1914). I wondered whether Mr. Fison had tried to introduce it by bringing larvæ from the Southern Alps. However, Mr. Wheeler tells me he does not think my uncle "deliberately brought orion larvæ to Charpigny. He may possibly have brought ova in plants of Sedum from Branson, or more probably from south of the Alps Charpigny is quite ideal for orion, and it might get there from Branson as easily as amandus from Vernayaz.—L.M.F.

SCIENTIFIC NOTES AND OBSERVATIONS.

RESTING ATTITUDE OF THE LYCENIDE.—Mr. F. W. Frohawk has recently called attention to the fact that the sleeping attitude of the Lycaenidae is with the head upwards, and that although they take up their position in the early evening with head downward, they turn round on the approach of darkness. It is suggested that in the preliminary position the butterfly is safer from a fatal attack by birds, while when no necessity for such position arises, as in the dark, the natural position is assumed.

DOTES ON COLLECTING, Etc.

Myrmecophilous Arthropoda from Algeria.—I give below a list of Arthropoda taken in ants' nests in Algeria* in April, 1913. The phenomenon of myrmecophily is so interesting, and has been so little studied in most parts of the world, that, though a hurried visit prevents the possibility of making biological observations on ant guests, yet this bare list is perhaps worth publishing. At Hammam Meskoutine the bristle-tail Lepisma wasmanni, Moniez, was found in a nest of Myrmecocystus viaticus in the hard clay of a pathway. A nest of Tapinoma erraticum harboured an Aphid which Prof. Theobald has described as new under the name Forda rotunda. A week later we found a number of myrmecophilous creatures at Lambèse, in the region of the high and arid plateau. Nests of Pheidole pallidula were tenanted by a new genus and species of Aphid (Rectinasus buxtoni,† Theobald). In one case such an ants' nest was found under the same stone as a colony of the "white ant," Leucotermes lucifugus. This was, however, apparently not a case of association, but rather due to accident. The Aphid in question was often extremely abundant; several hundred might be seen covering any rootlet which happened to cross the cavities within the nest. The same species of Aphid was also found in a nest of

^{*} Ent. Rec., xxvi., p. 63, "Notes on Tunisian and Algerian Insects."

[†] Entom., xlvii., p. 28, 2 figs., "Two new Myrmecophilous Aphides from Algeria."

Bothryomyrmex meridionalis, which was also tenanted by the Isopod Platyarthrus schöbli and numbers of a Coccid which Prof. R. Newstead has so far been unable to determine. A nest of Messor barbarus sheltered the Thysanuran Lepisma wasmanui and the two woodlice (Isopoda) P. schöbli and Lucasius tardus, both of them in abundance. All these nests at Lambèse were found under large loose stones. At El Kantara a colony of Messor barbarus, under a rock, harboured at least fifteen Lepisma wasmanni.

I am indebted to Mr. Robert Gurney for a good deal of the material and for determining the Isopods. The Rev. F. D. Morice identified the ants, Prof. F. V. Theobald described the Aphids, Prof. G. H. Carpenter named the Thysanura, and Prof. Nils Holmgren the Termite. Prof. R. Newstead was good enough to take charge of the Coccid.—

P. A. Buxton (F.E.S.), Fairhill, Tonbridge.

WURRENT NOTES AND SHORT NOTICES.

Pressure on our space often curtails our column of "Current Notes" and defers many interesting items until they are hardly "current." This is occasionally somewhat unfortunate.

The only son of Mr. Donisthorpe has been given a Commission; he is attached to the Intelligence Corps and left for the front in

December.

The two sons of Mr. C. J. Gahan, Keeper of the British Museum

(Natural History), are serving at the front.

Dr. Chapman's nephew and Mr. T. W. Halls's two sons passed through the terrible bayonet charges with the London Scottish quite unscathed, although the younger of the latter has since been wounded by a shell, but we are pleased to hear only slightly.

A son of Dr. Longstaff, F.E.S., is serving in the artillery in France. A nephew of Mr. R. S. Mitford, C.B., F.E.S., was granted the D.S.O. and the French Cross of the Legion of Honour for distinguished

service in the Field.

Captain P. A. Cardew, till recently a regular attendant at the meetings of the South London Entomological Society, has been for

some time on the lines of communication in France.

The Staff of the Entomological Department at S. Kensington is well to the fore in this mighty struggle. Out of the 23 members of the staff no less than 12 are actively engaged in the war. Mr. E. E. Austin is a Captain in the Artists, 28th Co. of London, Mr. N. D. Riley is a Lieutenant in the Army Service Corps, and Mr. K. G. Blair is in the 4th Battalion of the Seaforth Highlanders. This is 3 out of the 10 Assistant Keepers. From the 12 Attendants no less than 9 are away, viz:—Messrs. H. G. Herring and H. Stringer in the Surrey Yeomanry, Messrs. C. Hill, J. Gabriel, H. F. Mugford, C. A. Cockley and M. W. Stanley in the Civil Service Corps, and Messrs. W. E. Phillips and F. Barnett, in the Army Service Corps. Mr. D. H. Gotch, of the Imperial Bureau of Entomology, is also in the Artists Corps. In addition we understand that Sir G. F. Hampson is a special constable and that Messrs. J. H. Durrant, G. Meade-Walde, F. W. Edwards, and F. Laing are connected with ambulance corps.

Mr. R. S. Bagnall has two brothers serving, Mr. C. L. Bagnall is a Captain in the Durham Light Infantry Territorials and is attached to the Service Brigade, while Mr. W. A. Bagnall is a Captain in the Durham Light Infantry. Under these circumstances Mr. Bagnall has been compelled to leave Oxford and take up his old duties in Sunderland.

In the terrible calamity which happened to the steamship "Empress of Ireland," Entomology lost a splendid worker in the death of Mr. H. H. Lyman, who with his wife was coming to Europe. Only the night before his fatal voyage he was present at a meeting of the Royal Society in Montreal. An account of his life and work has been

promised.

The Nominations for Officers and Council of the Entomological Society of London for the ensuing session, 1915-16, are as follows:— President: The Hon. N. C. Rothschild, M.A., F.Z.S. Albert Hugh Jones. Secretaries: Commander James J. Walker, M.A., R.N., F.L.S., and The Rev. George Wheeler, M.A., F.Z.S. Librarian: George Charles Champion, A.L.S. Council: George T. Bethune-Baker, F.L.S., F.Z.S., E. A. Butler, B.A., B.Sc., E. A. Cockayne, M.A., M.D., M.R.C.P., J. E. Collin, F.Z.S., H. Eltringham, M.A., D.Sc., F.Z.S., C. J. Gahan, M.A., E. Ernest Green, G. B. Longstaff, M.A., M.D., G. Meade-Waldo, M.A., G. W. Nicholson, M.A., M.D., H. Rowland-Brown, M.A., A. E. Tonge.

The List of Members nominated for the Officers and Council of the South London Entomological and Natural History Society for the ensuing session, 1915-16, is as follows:—President: B. H. Smith, B.A., F.E.S. Vice-Presidents: A. E. Gibbs, F.L.S., F.E.S., and A. E. Tonge, F.E.S. Treasurer: T. W. Hall, F.E.S. Librarian: A. W. Dods. Curator: W. West (Greenwich). Editor of Proceedings: Edward Step, F.L.S. Hon. Secretaries: Stanley Edwards, F.L.S., F.E.S., F.Z.S., and Henry J. Turner, F.E.S. Conneil: R. Adkin, F.E.S., S. R. Ashby, F.E.S., J. Platt Barrett, F.E.S., Dr. T. A. Chapman. F.Z.S., B. S. Curwen, W. J. Kaye, F. E. S., D. R. Morford, N. D. Riley, F.E.S., and W. G. Sheldon, F.E.S.

Now that magazines and other publications no longer arrive from the Continent of Europe, there is much less entomological doing to

chronicle in our Current Notes.

In the September magazines the following items may be of interest. (1) A summary of the Destructive Insects of New Jersey given in the Canadian Entomologist gives the following table.

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		No. of species.	destr	No. of uctive spe	e o ies. de	Percentage structive spe	
Coleoptera		3092		50	• • •	1.6	
Lepidoptera		2120	• • •	58		$2 \cdot 7$	
Hymenoptera		1980		9		0.4	
Diptera		1661		28	• • •	1.6	
Hemiptera		504		8		1.5	
Homoptera		479		28	• • •	5.8	
Orthoptera		154		5		3.2	

The insects considered destructive are those against which measures of control must at some time or other be directed.

(2) In the Scottish Naturalist, Mr. Percy H. Grimshaw, after a lapse of several years, has resumed his articles on "Diptera Scotica" and deals with the species which appear to have been recorded from the area of Scotland comprised in the Western Isles.

(3) In the *Entomologist*, Mr. W. G. Sheldon has commenced an interesting account of an "Expedition in Search of Russian Butterflies," giving the results of a long holiday spent by Mr. A. H. Jones and himself mainly at Sarepta, some three hundred miles from the

mouth of the Volga.

(4) To the same magazine the Rev. J. W. Metcalfe, who is collaborating with Mr. F. N. Pierce in the study of the genitalia of the British Tortrices, contributed an article on some of our local Crambi. He reports that Lithosia lutarella var. pygmaeola, Crambus contaminellus, Nyctegretes achatinella, Melissoblaptes anellus (bipunctanus), Retinia purdeyi, etc., were easily obtainable, by those who knew their peculiar habits, in their old Deal habitats.

(5) Mr. J. R. le B. Tomlin, in the Ent. Mo. May., contributed a list with a few notes of the 343 species of Coleoptera taken by him at

Cloghane, Co. Kerry, during a short visit in the spring.

(6) To the same magazine Commander J. J. Walker is contributing a very comprehensive article on the Geographical Distribution of

Danaida plexippus and its recent migrations.

Mr. Bagnall writes, "The war has affected me in other ways. As you know I was writing the volume on Thysanoptera for Das Tierreich and had hoped to send the MS. for the first part to Berlin in April, 1915, whilst I had intended to set aside this winter for the preparation of a Monograph of the Tertiary Thysanoptera—chiefly based on a large and unique collection of Thrips preserved in Baltic amber—to be published in Konigsberg (!!) Now my opportunities for research will be very much curtailed, but I feel that I am beginning to get the Order (Thysanoptera) into a better working condition, and I think of shortly publishing a Catalogue of the World's Species, with an Index of generic names used to the end of 1914, and a Bibliography. This

would form at any rate a basis to work on."

A Year's Scientific Work in Yorkshire, being the Yorkshire Naturalists Union's Fifty-second Annual Report, is always interesting reading. It consists of some 20 pages of matter. The reports of the secretaries of the various sections take up by far the greater part of the account. The Vertebrate Section has detailed notes from the four Ridings of Yorkshire, from the Wild Birds Protection Committee and from the Mammals, Reptiles, etc., Committee, including accounts of the watching at Hornsea Mere, Spurn and Bempton. The Conchological Section has notes from the various Ridings and from the Marine Biological Committee. The Entomological Section has reports on Lepidoptera, Coleoptera, Hymenoptera, Diptera and Hemiptera, Neuroptera and Orthoptera, and Arachnida. In the Botanical Section are Notes on the Flora, Reports of the Botanical Survey Committee of the Bryological Committee, of the Mycological Committee and Notes on the Algae. The Geological Section contains notes on the practical work which has been carried out in a number of specified localities, Report of the Jurassic Flora Committee, Report of the Glacial Committee and Report of the Coast Erosion Committee. There is also a Report from the Committee dealing with Micro-Botany and Micro-Zoology. The official organ of the Union is the Naturalist, in which accounts of much of the individual work of members of the Union are recorded month by month. It would seem from this report that the Union, which has less than 400 members, must have few

non-workers. The sectionising of the Union into small groups of workers seems to be conducive to good results and gives an opportunity for each and all to take a definite part in some special investigation or join in some scientific study for the advancement of knowledge.

In the October Magazines the following items are more or less

interesting.

(1) In the Canadian Entomologist, is announced the death of Dr. William Saunders, one of the founders of the Entomological Society of Ontario, at the ripe age of 79. For many years after his retirement from his business as a druggist, in 1886, he had been Director of the

Experimental Farms of the Dominion.

(2) In the Scottish Naturalist, Mr. Wm. Evans commenced an account of the Lepidoptera (moths) captured at Scottish lighthouses mainly in the Forth area. Fully 6,000 moths, of which 4,000 were from the Isle of May lighthouse alone, have been sent to him. On one night in July no less than 400 specimens of 30 species were secured, on another in September, 1913, 357 specimens of 11 species were sent to him from Killantringan. It is interesting to note that several examples of Aglais articae and one each of Pyrameis atalanta and Polyommatus icarus were included among the insects forwarded. Among the Noctuids were examples of two which are always considered very rare so far north, viz., Luperina cespitis and Ceriyo matura.

(3) The Rev. W. F. Johnson contributed some interesting observations on infrequent species of Lepidoptera in Ireland to the Irish Naturalist. Aglais articae commenced hybernation in the latter half of July. A specimen of Mandaca atropos was sent to him by the Rev. J. Jennings on June 24th. Both Emmorpha elpenor and Theretra porcellus were sent to him from Donegal. Hemaris tityus (bombyliformis) was taken in Armagh. A nest of the larvae of Hyponomeuta enonymellus (padi) was met with at Newcastle, Co. Down. The larvae of Plutella cruciferarum occurred only too plentifully on cabbage at

Poyntzpass.

(4) In the Ent. Mo. May. Dr. Chapman gave a note on the Pyrenaean Psychid Orcopsyche pyrenaella, with a plate of larval structures.

(5) In the same number Mr. C. G. R. Waters gave a list with localities of the *Pyralides*, *Pterophori*, *Crambi*, and *Tortrices* taken at

Oxford and the adjoining country from Chinnor to Wantage.

(6) In the same number Mr. T. W. Kirkpatrick contributed a List of Marlborough Diptera and has included a species new to the British list, viz., *Trichocera hirtipes*, and Mr. J. R. Collin adds a further note on the status of the species.

(7) In the Entomologist, Mr. Percy C. Reid by his account of a visit to Shetland, recalls to mind the various visits which were, during the latter part of the century, an annual feature of the Retrospects in our magazines. Most of the special species and local forms appear to

have turned up in more or less quantity.

The Smithsonian Institution, Washington, the authorities of the United States National Museum, have sent us the following recent publications:—Lepidoptera of the Yale-Dominican Expedition of 1913, by Harrison G. Dyar. Orthoptera of the Yale-Dominican Expedition of 1913, by A. N. Caudell. Hymenoptera of the Yale-Peruvian Expedition of 1911, by P. R. Myers. (Addendum). New Species and Genera of Lepidoptera from Mexico, by Harrison G. Dyar. New N. American

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Bees of the genus Andrena, by H. L. Viereck and F. D. A. Cockerell. Vespoid and Sphecoid Hymenoptera collected in Guatemala by W. P. Cockerell, by S. A. Rohwer. The same criticism does for all. It is a great pity that so many of the descriptions of new species are isolated. Comparisons with and references to allied species are mostly conspicuous by their absence, and many of the descriptions must be useless to the student except with a deal of unnecessarily caused trouble.

The magazines for November contain the following articles of

general interest.

(1) In the Scottish Naturalist are two records of the occurrence of Agrius convolvuli, one taken at the lighthouse at North Unst, Shetland, on August 28th, 1914, and the other taken at the Isle of May light.

(2) Mr. Norman H. Joy, in the Ent. Mo. May., announced the discovery of a Coleopteron new to Britain, Gabrius primigenius, taken in sphagnum near Bradfield, of which several specimens were obtained by Mr. Tomlin and himself. Mr. David Sharp described a species of Haltica, H. britteni as new to science. It appears to be no rarity in Scotland, where it occurs on Erica with a closely allied species H. ericeti, with which it has hitherto been mixed. Mr. R. S. Bagnall described a species of Thysanoptera new to science, Enthrips tamicola. It was taken on flowers of Black Bryony (Tamus communis) at Yarnton, Oxon, and subsequently in other localities in Berks.

(3) In the Entomologist, Mr. H. Rowland-Brown gave an account

of a collecting tour of three weeks in the Dauphiny Alps.

SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. -August 13th.-Exhibit of Exotic Saturning and Sphingids.-Mr. Edwards, the large Saturniids Antheraea paphia, Automeris illustris, Citheronia magnifica, Samia angulifera, S. promethea, the Sphingids Oxyambulyx substrigilis and Psiligramma menephron, and Eribomorpha fulgarita. Pink variation in N. Reticulata, etc.—Mr. Newman, the pink form of Neuria reticulata from the coast of Co. Cork, and two forms of the pupa of Selenia lunwia, the chocolate coloured hybernating form and the bright green second brood form. A Psychid Larva. - Mr. A. E. Gibbs, a large Psychid larva (*Eketicus kirbyi*) which fed on sweet lemon. Variation in European Apaturibs. -Mr. Curwen, fine series of Apatura iris, A. ilia with ab. clytie, ab. iliades, ab. pallescens, etc., from Samoussy near Laon. The willow MITE, ETC.—Mr. C. B. Williams, living larvæ of Saturnia pyri from Syria, and reported finding a mite, Eriophyes, in the willow galls exhibited at the last meeting. Eggs of Ascalaphus.—Mr. Main, a living pupa of S. pyri from Lugano and eggs of Ascalaphus from S. THE PSYCHID, OREOPSYCHE PYRAENELLA.—Dr. Chapman, the cases of a Psychid, Oreopsyche pyraenella, from Gavarnie, Pyrenees, and gave notes on the life-history of the species. The 3 moults twice at pupation, the 2 only once.

Angust 27th.—Aberrations of P. Icarus.—Mr. T. W. Hall, aberrations of Polyommatus icarus from Hertford and Folkestone, including radiated underside, dwarf, brilliant blue P, bleached J. etc., specimens. O. Pyraenella.—Dr. Chapman, the Psychid Oreopsyche pyraenella with examples of the larval skins moulted at pupation. Alien

INSECTS IMPORTED WITH SUGAR.—Mr. Main, insects found in baskets of cane sugar from Java, including Coleoptera, Blattidae, a cricket, etc. Aberrations of P. ICARUS.—Mr. Neave, blue ? aberrations of Polyommatns icarus from Otford 1st brood and Chipstead 2nd brood. Exotic butterflies.—Mr. Edwards, examples of the genera of Rhopalocera, Delias, Metaporia and Dismorphia. Discussion on the habit of returning to the same place.—A discussion took place as to the habit of some species of Lepidoptera to return again and again to the same spot, Mania maura, Gonepteryx rhamni, Amphipyra pyramidea, etc., being instanced.

September 10th.—Swiss Lepidoptera.—Mr. Ashdown exhibited lepidoptera taken by him in June and July at Lugano and Zermatt, including Eneis aello, Anthocharis simplonia, Aricia eumedon, Albulina pheretes, Syntomis phegea, etc. Larvæ of Ascalaphus.—Mr. H. Main, larvæ of an Ascalaphus just hatched sitting with open jaws for prey. Aberrations of Ruralidæ.—Mr. Turner, Agriades thetis & with very dark underside, and a & Polyommatus icarus with much intensified submarginal dark spots on the underside. Aberrations of M. Brassicæ.—Mr. B. S. Williams, a black suffused Mamestra brassicæ, and one with pale ground and aberrant stigmata. Exhibit of Anthrocerids.—Mr. Curwen, species of Anthrocera taken by him recently, and suggested a future discussion on the genus.

September 24th.—Lantern Slides.—Exhibition of lantern slides by Messrs. B. S. Williams and Dennis. Variation in P. Napi.—Mr. Newman, bred series of *Pieris napi* from Cork and Sligo with yellow suffused and black suffused aberrations, one of the latter having a complete transverse black band on forewings. Autumn appearances.—Reports were made on the occurrence of C. edusa, P. atalanta, P. cardui, etc. Only stray specimens had been seen of C. edusa, while

the other two species were common.

October 8th.—Dr. Salisbury gave a lecture on the "Flora of the

Seashore," with a long series of lantern illustrations.

October 22nd.—Discussion on the Anthroceridae (Zygaenidae).— The evening was set apart for an exhibition and discussion of the genus Anthrocera, introduced by Mr. B. S. Curwen. Mr. Curwen exhibited a collection of Palearctic Anthroceridae consisting of some 26 species and forms. Dr. E. A. Cockayne, the series of A. hippocre-pidis from the late J. W. Tutt's collection, with various series of A. filipendulae, A. trifolii, A. palustris, and A. lonicerae. Mr. F. H. Stallman, early and late races of A. trifolii, A. filipendulae, etc., Mr. Buckstone, similar series with a suggested hybrid series trifolii × filipendulae. Dr. Chapman, a drawer of European Anthroceridae captured during the last few years, including A. anthyllidis, A. contaminei, A. sarpedon, etc. Mr. Hy. J. Turner, series from many localities, mainly of the five- and six-spotted species of the Transalpiniformes group. Mr. L. W. Newman, series of bred Anthroceridae species. Mr. Page, long series of British Anthrocerids, with a parallel series of A. hippocrepidis taken at the same time and place as the late Mr. Tutt's series. Papers and notes on the above exhibits were read and communicated by Messrs. Curwen, Cockayne, P. A. Buxton, Turner, R. Adkin, and others. Varieties and hybrids exhibited .- Mr. Newman exhibited long varied series of Dianthoeria barrettii, bred from Co. Cork and S. Devon, bred series of Boarmia repandata from the Wye Valley and

SOCIETIES. 23

from N. Cornwall, and a series of the rare hybrid populi × ocellatus. Mr. Tonge, the same hybrid and a Rumicia phlacas from Deal, with

the red submarginal band on the hindwing quite wanting.

November 12th.—Hibernating P. Atalanta.—Mr. Sich reported having seen a Pyrameis atalanta in Holborn on that day, November 12th. An immigrant and colony.—Mr. H. Moore, a small colony of the ant Camponotus adominalis, found in a banana from W. Indies. A HAZEL GALL-MITE.—Mr. Step, abnormal catkins of hazel from Mickleham, probably due to the attack of the gall-mite Eriophyes coryli. A GYNANDROMORPH OF A. CORIDON.—Mr. Hall, a gynandromorphous specimen of Agriades coridon, essentially a female, but with patches of blue scales and androconia on the right forewing. French Lepidoptera.—Mr. Curwen, a number of species of Geometer taken in France.

December 14th.—New Member.—Mr. W. Schmassmann, F.E.S., was elected a member. Paper.—Mr. W. J. Lucas read a Paper on the "British Long-horned Grasshoppers," and illustrated his remarks with a long series of lantern slides depicting the various species. The Giant Sawflies of Great Britain and their large Parasite.—Mr. A. E. Gibbs exhibited the two large species of British sawflies, Sivex noctilio and Sirex juvencus with their parasite Physsa persnasoria, and gave details of their life-histories and distribution. He said that both species were found at St. Albans or in the neighbourhood, and that the parasite had also been taken there but was probably rare. Orthoptera.—Mr. H. Moore, a number of species of exotic long-horned grasshoppers. Mr. Step, an apterous form of a long-horned grasshopper from South Africa—Hetrodes petersi female. He believed that both sexes

were apterous.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—October.—This was the opening meeting of the Society. Exhibits of the Season's Work.—Mr. F. N. Pierce showed Cyclopides palaemon (paniscus) from Northants and a large number of Micro-lepidoptera including Grapholitha (Laspeyresia) gemmiferana, Penthina gentiana, and Leioptilus microdactulus from Devon, and Dichrorampha saturnana. Mr. A. W. Hughes brought a long series of Polygonia c-album including var. hutchinsoni, and Araschnia levana from Herefordshire; he reported that the latter butterfly seemed to be establishing itself there. By the same member, a long series of Aricia medon (astrarche), including var. semi-allous from Silverdale. Mr. Buckley had a fine series of Odontopera bidentata var. nigra from Birmingham, also the local form of the same species from Urmston, varied series of Agrotis ashworthii and Boarmia repandata from North Wales, Dianthoecia nana from Anglesey, and D. capsophila, pale forms, from Eastbourne. Mr. B. Tait, Jnr., had three large cases containing the results of his holiday in South Devon, these included Leptosia sinapis, Hesperia malrae var. taras, Cidaria truncata (russata), and var. centum-notata, and varieties of Polyommatus icarus. From Penmaenmawr he showed the following taken at heather bloom: Agrotis lunigera, A. lucernea, A. ashworthii, and Mamestra furva; he had also found Acidalia contignaria, and for the first time captured wild the local melanic form of Boarmia repandata. And from Huddersfield he showed a very fine lot of varieties of Abraxas grossulariata which included a grand series of ab. nigro-sparsata and one remarkable specimen having the left side wings black with a few marginal streaks on the hind-wing, while the wings on the right side were typical. Dr. J. Cotton brought a fine specimen of Manduca atropos captured at light

at Knowsley early in October. Mr. R. Wilding showed fine series of a number of Rhopalocera from the New Forest, Silverdale and Ireland; noteworthy among these was a fine row of Irish females of Polyommatus icarus. Mr. W. Mansbridge brought a long bred series of Aplecta nebulosa, the progeny of Delamere parents; these included the local type form, var. robsoni, and a scarce leaden grey variation, also a short series of Abraxas grossulariata from Huyton of which a number were ab. lacticolor, dark Polia chi from Hebden Bridge and Odontopera bidentata var. nigra from wild larvæ beaten on Simonswood Moss, in which locality, although of rare occurrence, it appears to be increasing.

London Natural History Society.—April 21st, 1914.—Asymmetrical N. Pulveraria.—Mr. Bernard Cooper exhibited a fine asymmetrical specimen of Numeria pulveraria, bred in March, 1914, from New

Forest ova. The band was obsolete on the right forewing.

May 19th.—Melanic L. Hirtaria.—Mr. A. W. Mera, on behalf of Mr. B. S. Williams, a melanic specimen of Lycia (Biston) hirtaria, bred at Finchley from wild pupe. Hybrids.—Mr. A. J. Willsden, the reciprocal hybrids of Lycia hirtaria and Nyssia hispidaria.

June 2nd.—Bred C. Edusa ab. Helice.—Mr. J. Riches Colias edusa

var. helice, bred from Eastbourne ova.

September 1st.—Aberrations and Gynandromorphs.—Mr. H. B. Williams, a short series of Euchloë cardamines, bred in May, 1914, including a 3 with extra spot below the discoidal spot, underside. A long series of Polyommatus icarus, taken in June at Boxhill and Banstead Downs, showing strong tendency to obsolescence in the underside spotting; also two gynandromorphous specimens of Amorpha populi, bred on August 2nd, from June ova. Aberrations of C. Minimus.—Mr. W. E. King, specimens of Cupido minimus with ab. obsoleta and ab. extrema, from Horsley. The Season 1914.—Mr. Williams read some notes on the season's collecting.

October 6th.—Varieties of B. Repandata.—Mr. F. H. Heath, a fine series of Boarmia repandata from Lynton, including ab. conversaria. Varieties of P. Icarus, etc.—Mr. C. H. Williams, Polyommatus icarus from Ireland; also an ab. obsoleta & and an ab. antico-striata, Tutt. Mr. W. E. King, a series of P. icarus taken at Horsley this year, including ab. striata, ab. obsoleta, ab. antico-obsoleta, ab. subobsoleta, ab. posticoapicalis, ab. costajuncta, ab. melanotova, etc. Mr. L. W. Newman, a gynandromorphous P. icarus having right forewing 2, remainder 3 except one red ? lunule on each hindwing; another chiefly ? but having small & patches; also a gynandromorphous Agriades thetis, chiefly 2, but with a splash of 3 colour along the costa of the right forewing; Agriades coridon ab. minutissimus; and a series of Gastropacha ilicifolia bred from a 2 taken at Cannoch Chase by Mr. G. B. Oliver in 1913. Mr. H. B. Williams a long series of Agriades coridon taken in August, 1914, in North Herts, including long series of ab. semisyngrapha, Tutt, ab. inaequalis, Tutt, ab. parisiensis, Gerh., and fine series of ab. obsoleta and ab. striata, undersides 3 and 2; a 2 of the colour of Coenonympha pamphilus, and a 9 with bluish suffusion over the greater part of the underside of the right hindwing; also a series of P. icarus from the same place, including fine blue 2s and ab. melanotoxa, ab. biarchata, ab. basijuncta, ab. costajuncta, and forms combining ab. melanotoxa, ab. costajuncta, and ab. basijuncta; also ab. antico-striata, four extreme ab. subobsoleta, Tutt, and two ab. obsoleta, Clark, and other interesting forms.

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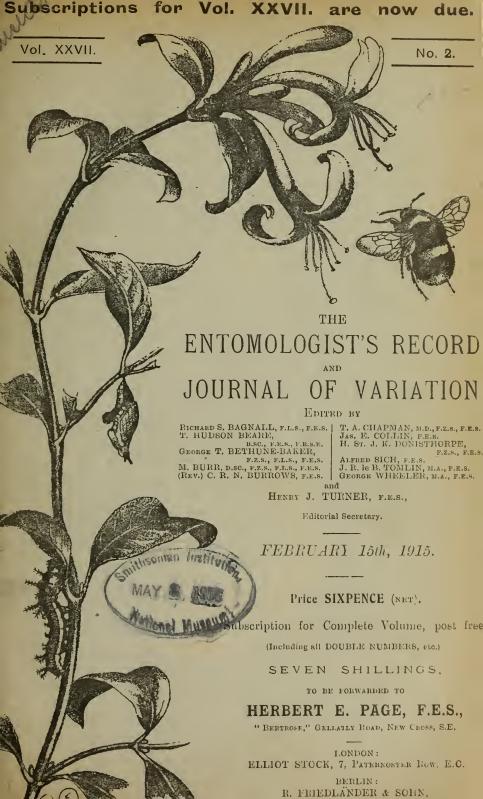
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Notes on Swiss Rhopalocera. IV.

By the late A. J. FISON.

(Communicated by Miss L. M. Fison.)

Extract from his letters to, and kindly lent by, the Rev. G. Wheeler.

1902.

1. Monte Bré, near Lugano.

"Lugano, April 16th, 1902.

"Am just back from Monte Bré, near Gandria, where I took the following: - Six Libythea celtis (three very old), one Cupido minima, one Nomiades cyllarus, Papilio machaon and Papilio podalirius, three Gonepteryx rhamni, Vanessa io, two Enranessa antiopa, five Celastrina argiolus, Leptosia sinapis, Pieris brassicae, Pieris rapae, Pieris napi, Colias hyale, Colias edusa, Coenonympha pamphilus, and one Pararge aegeria, southern form.*

"Of course, the first is the best catch. I must have seen a dozen settling on the young oak or other trees; they were not very hard to catch.. On Monday next I hope to go on for a week to Pension Righetta, Madonna del Sasso, above Locarno. I forgot to say that there were lots of Euchloë cardamines, but no Euchloë euphenoides, or

2. Lugano.

"Clarens, May 5th, 1902.

"I came back last Tuesday, having had very bad and cloudy weather; only two-and-a-half days really fine and fit for insect hunting. Except the Libythea celtis, I only got of any importance Scolitantides orion, and the southern form of Pararge aegeria.

"I must except, however, my last butterfly caught, which is a very handsome, dark variety of Pararge megaera. On all the wings the dark lines and margins are broad and strong; not much of the yellow is seen. This gives it an appearance quite different from the type. The pupilled eyes are well developed, and at the apex of forewing there is a second tiny white pupilled eye. † It was too wet to go to the marshes at Locarno."

CHARPIGNY AND PLAN CERISIER.

"Charpigny, June 12th, 1902.

"One has lost so much time lately through wet. Like you, I have got one or two good ? cyllarus this season—one with blue on it. . .

. . Here I have found some of the dark vars. of Papilio machaon, 1 and took two. I also took a fine Melitaea aurinia on the rock about a week ago. One day (the only outing lately) I found no berisalensis at Plan Cerisier, but took a fine orion by the little chapel due S. of it. I fancy parthenie must be flying here now."

+ N.B.—Is this Mr. Fison's ab. transcaspica, Stgr., from Losone, near Lugano?—I.M.F. Yes.—G.W.

FEBRUARY 15th, 1915.

^{*} N.B.—What form is this? Not the type, I suppose? Is var. egerides, Stgr., the usual form in Switzerland?—L.M.F. Egerides is the usual form in Switzerland north of the Alps, except in the Jura, where intermedia is general. The Lugano form is rather tawny intermedia. - G.W.

[†] Are these var. burdigalensis, Trimoulet ?-L.M.F.

4. Weesen.

"Weesen, Walensee, June 20th, 1902.

"I must tell you how I got two perfect specimens of Araschnia lerana var. prorsa yesterday near here. Both were in a sunny, narrow ravine up which the road climbs to Thalalp See over Filzbach. The first was with some Capido minima on some garbage in the road, and I got it at once. It was in a spot where all trees (firs and beeches) had been cut, and nettles were abundant. I waited 45 minutes, but Only a good number of 'Wood Argus.' 'Orange saw no more. Tips' and 'Green-veined whites' were abundant. Going on, I soon entered the Thalalp cow-pastures by a gate, and at once a second var. prorsa got up (probably also from the wet path), and I got it directly. At that height near by were a great many Pararye hiera, but I could see no nettles there. Later I went further up the path, and again there was a good, sunny gorge with nettles abundant, and the same butterflies, but no var. prorsa. This was close to the lake level of, say, 1,150 metres. The first I got was at about 950 metres. turning, I went over the best (S.) side of the Weesen Marsh, but only saw two or three Melitaea aurinia. No Coenonympha tiphon, Lycaena euphemus, or L. arcas. Men I spoke to say everything here is at least three weeks late this season. To-day I was again in a part near the fine Obersee where nettles and beeches grew, but there was no sun and no butterflies. This ought to be a good district for var. prorsa. Weesen is not such a desirable centre as Bex. . . . (Cf. note on Araschnia levana in Ent. Record, vol. xxvi., p. 242.)

5. Araschnia levana, L.

"Clarens. June 28th, 1902.

"Am glad to know where you are that I may correct mistakes in my last p.c. .It was Araschnia lerana, and not var. prorsa, that I caught. A second day in the little Kupfernaseruns gorge I got two more, and in the Murgthal a third couple. Of these, four were on the roads or paths, one on nettles, and one on grass, with few nettles or beeches anywhere about, and rather high. All were caught as high as the one in the cow-pastures. Both valleys were cool and faced North. No doubt things are very late on the high pastures. . . I have only seen four or five Erebia yet. . . . I should add that my lerana have much golden-brown colour about them, and are not so black as var. prorsa would be. All are perfect. I possibly saw two others, but not near."

6. Erebia manto, Esp., var. pyrrhula, Frey., etc.

"Charpigny, August 8th, 1902.

"You will, I know, be interested to hear that I have had what I believe is an undoubted 2atch of *Erebia manto* var. pyrrhula; and on the Dent du Midi too (W. corner). I can pretty well see one spot from the window (Mr. Fison's sitting-room at Charpigny), i.e., Anthémoz, S. of Champéry, where I first got them on the 29th July, and there again (and further S. of it too) on 6th inst. To-day I have been comparing these with the six in my drawer, which you said were no doubt var. pyrrhula. They are quite as small (some I fancy smaller), and have forewings quite as pointed and angular. The forewings spots vary much; one or two have largish black spots in oval

patches; generally, I think the band is in long, narrow patches; sometimes it is reduced to two or three small chestnut patches. In some the colour on underside hindwing is very faint; but in half or more I note a tiny spot of colour three-fifths of the way access the wing (two-fifths from body, and two-fifths from top of ring), which is noted by Frey as found in var. pyrrhula. This spot I cannot find in my 3 manto or in my six pyrrhula, but it corresponds with the bright yellow blotch in my 2 manto, where it forms part of an irregular line of yellow spots. This is interesting. Lacking this spot, my six could scarcely be from the Dent du Midi, as I thought at first. I hoped I had twenty, but to-day I found twelve is nearer; two or three are ?s. I wish I had stopped to get more. I found them in long grass between, or amongst, forest, at say, 5,000ft. The first were 150ft. from Anthémoz cow-chalets. Much higher up (7,000ft), under the Dent du Midi rocks, I got six Erebia alecto var. glacialis; three of which, I find now, are var. pluto. I had a great catch of Rusticus sephyrus var. lycidas going to Simplon. Got many small Erebia in Laquinthal, but would not be sure I had Erebia christi. As I left Simplon, on the 21st, I met Chanoine Favre and a naturalist arriving. He thought I probably had christi, but could not see my specimens. The fortnight at Champéry was very pleasant. I got several Erebia lappona ab. pollux under the Dent du Midi, and one Parnassius delius at Barmaz. I may try the Rochers de Naye for manto. Will you not try for var. pyrrhula at Anthémoz, S. of Champéry, and at same level more to S., opposite Bonaveau?"

1903.

1. Butterflies in March, 1903.

"Clarens, March 23rd, 1903.

"Last Saturday, at Salvan, I saw a white butterfly of some rather quick-flying sort, but failed to get it. On Monday (22nd) I saw a fine Papilio machion at Massongex, near Bex. Yesterday, another was playing round La Tête at Charpigny. I also saw there, two or three Pieridae, a Polygonia c-album, and a Eugonia polychloros, beside lots of Aglais urticae, and Goneptery, rhamni. It must be very early for 'swallow-tails.' On Saturday we also saw a Vanessa io."

2. Sierre.

" May 7th, 1903.

"I suppose the fly you call melanops" is a var. of Nomiades cyllarus and probably a \(\gamma \). To-day I have caught many Nomiades cyllarus in the meadows along E. edge of Pfynwald towards Illgraben; several are dark \(\gamma \), but I cannot recognise a melanops. One has a lovely double stroke of blue V from forewing near to the centre, and a less clear blue stroke below on lower wing, both upperside. The rest is dark. Most of the Nomiades cyllarus are small, especially two \(\gamma \) s. I also got, nearer Illgraben, a lovely fly with a most conspicuous circular spot near apex forewing, upperside, and touching costa, which reminds me much of the Anthocharis belia var. ausonia you once had to compare with mine.† The irregular white spots, hindwing underside, are

† A. simplonia var. flavidior .- G.W.

^{*} Mr. Elwes reports melanops from Sion, but no other specimen is known. Mr. Fison's insects are cyllarus ab. blachieri.—G.W.

pearly-white. The discoidal spot does not touch costa upperside, but nearly touches a comma-like spot above it, which also lies below the costal edge. The costal edge, from this upper long spot towards body, is powdered (rather pointed), at regular intervals. The white line along centre of lower side, so clear in Anthocharis simplonia, is excessively faint. I never saw the like, I believe, in my simplonia. The points on the costal edge are more numerous along underside forewing in which the marvellously exact circle is reproduced on a pale green ground. It touches costa above, and is bounded by a descending black mark on innerside; a second black mark is a little nearer body with the green between them. The discal spot on underside has a slight white line in its centre. The rays are very bright green of lighter colour. I note the season is so late that the grass has not grown at all; small gentians abound.

"I got one Pontia daplidice, but no simplonia, 12-20 Leptosia sinapis ab. lathyri, yesterday at Niouc; none of type here. Many Brenthis dia, Polygonia c-album, four or five Cupido minima (only), and one lovely 9 "blue" with colour of Agriades thetis ab. 9 ceronus, which I

fancy must be Polyommatus icarus (alexis).

"Several cyllarus are very small, especially one or two $\mathfrak S$ s. Only about three $\mathfrak S$ s are large in size. . . . Little at Niouc and beyond yesterday, except Issoria lathonia and Leptosia sinapis ablathyri.

"Rather warmer just now, and nightingales have sung last three-

days."

3. Lycaena iolas, Ochs.; Loweia (Chrysophanus) amphidamas, Esp., etc. "Bex, June 25th, 1903.

"Have been a good deal in the Valais lately. . . . At Lugano, in three weeks, I aid not get so much as in April or August last year in the same parts. Melitaca aurelia abounded, but I only saw three Melanargia galatea var. procida out. It was cold and wet at times, and a late season.

"Whilst here I have got a lot of Loweia (Chrysophanus) alciphron var. gordius at Vernayaz and La Bâtiaz, and about nine Melitaea

deione var. berisalensis.

"At Sierre, on the 20th, I got four Lycaena iolas in 40 minutes, when the sun went in. On the 23rd I could find none there at the same time, although the day was perfect, but returning about 1 p.m. I saw and took a \(\frac{2}{3} \). I had expected a great haul. Between, I went up to Niouc, but found nothing. On the 18th, at Caux, I took 48 Loweia (Chrysophanus) amphidamas* in about two hours, and two more yesterday. To-day, at Charpigny, I got eight Nordmannia (Theela) ilicis, and two N. (Theela) acaciae. These all just N. of the tower. "

4. TRAMELAN.

"Tavannes, June 30th, 1903.

"You may like to hear how I have succeeded here. I have just returned from exploring the valley of the Trame from Fuet to Tramelan. In the valley of hay, and a few fields under Fuet, I could find no trace of the 'Tourbières,' spoken of by the country

^{*} See end of notes.

All was now hay-ground, but near the cross-roads I got four Chrysophanus hippothoë. In the next part—a very narrow gorge—I got Loweia amphidamas as it flew up from the nettles and rough stuff which lined the tiny torrent. No more about there, but I got another old fellow, as I came to a wider part, and had to climb up S. to see if there was any shelter from a coming storm. This part, though it faced W., was the best butterfly ground I have yet seen. It gave me one good Chrysophanus hippothoe and one Cupido minima, whilst Plebeius argus, Polyommatus icarus (alexis) (old), Erebia oeme (old), Euchloë cardamines (old), and battered Brenthis euphrosyne were abundant. I got a good Brenthis selene too, and saw a bad Melitaea aurinia. I found shelter at the Orange railway halt, which would be an excellent point to train to, and then walk to Tramelan. Of that part, the first half mile from the narrow gorge to a large mill pond seemed to me the most likely ground of any for Loweia amphidamas. I am sure I should have got some there earlier in the day, but now all was too wet and sunless. I see by the state here of the butterflies I caught in good condition with amphidamas at Caux and Villars, that it is at least a fortnight too late for Tramelan now; almost everything seems past. P. icarus (alexis) is rare, and the only common 'blue' is Polyommatus semiarquis. I have seen no 'Burnets' (Anthroceridae, Zygaenidae). Aphantopus hyperantus is common, and the hawthorn, but nothing else. All round Tramelan there is little or nothing except hayfields, as here, and around all Jura villages."

5. Miscellaneous.

"Weesen, July 17th, 1903.

"A few lines to tell you how I have got on lately."

"At Wassen I stayed five days, but could not find Brenthis there. Indeed, I did not know where to look for it, and the weather was soon too cold. This induced me to go S. to Faido for six days. There I got lots of Loweia (Chrysophanus) alciphron var. gordius, and some well-marked ? Parnassins apollo. Amongst these I was much interested in an aberration with yellow spots, underside especially fine. Unfortunately, of the four I got, only one was not old, but I caught a good intermediate fly. One day, three miles from Locarno, I got (on mud in the road), four specimens of a fine new 'Skipper,' new to me. Upperside black, with a Greek c or s on upper edge of forewing, underside with yellow lozenges in black rings. A very pretty insect. Could it be the one you said flies at Giubiasco?* The last day at Faido, going out with a little American girl, she caught an old butterfly, which I soon decided must be Brenthis thore. This was in a cool forest clearing. Next day I came here. Wednesday, in Weesen Marsh, I got sixteen Lycaena arcas, sixteen Lycaena euphemus (rather old), seven Coenonympha tiphon, and four old Brenthis ino. Yesterday I went to a little shaded ravine with an unpronouncable name (above Filsbach) to look for var. prorsa, saw none, but in the nettles soon got two Brenthis there, and later two more: lots of Melitaea dictynna flying with them made great confusion.

^{*} This was, as Mr. Fison supposed, Heteropterus morpheus. It was the first S wiss record for over 50 years.—G.W.

+ Kupfernaseruns—an equivalent of "Brazenose," I suppose.—G.W.

Lunched. Saw nothing at all higher up, and almost thought of returning without seeing the Thalalpsee, when I got a second M. thore, and soon found there were lots about on a fairly clear, sunny part over (east of) the path. For half-an-hour I had an active time, whenever the sun came out. By 3 p.m. it was too shady and cool, but in all I came back with 20 thore. About one-half are rather old, but a few are splendid. Five or six Brenthis amathusia flew with them."

5. Champéry.

" August 4th, 1903.

"The cold and wet thus far have greatly hindered me. One day, on the sunny corner of an old moraine, one mile beyond Barmaz, I found 12 or 13 Brenthis pales, but no var. arsilache. It was very cold. Yesterday, at 1,800 m., behind Croix de Culet, I got a ? Epinephele jurting, which looks more like var, hispulla than any I took south of the Alps. To-day I have had a grand time at Anthémoz, but of my fourteen Brenthis pales most are 2, and I fear none are var. arsilache. When near returning, about 2 p.m., I went into a dry gully half a mile south of Anthémoz, and I think I never found a better place for small Erebia. I got about fourteen Erebia pharte (some few old), three or four Erebia epiphron var. cassiope, Erebia tyndarus and a large variety of it, two Erebia yorge, six very small Erebia manto var. pyrrhula, two Brenthis pales, four Coenonympha arcania var. darminiana, Erebia euryale, possibly a small Erebia oeme, and one or twoother things. I hope it may prove a permanent place for Erebia pharte. I have not seen Colias palaeno, Parnassius delins, or Erebia alecto var. glacialis. I have got two Chattendenia (Thecla) w-album, and I saw a fine Apatura iris on Sunday."

6. CHAMPÉRY TO CHARPIGNY.

"Charpigny, August 22nd, 1903.

"Was able to do but little after you left, but on Tuesday afternoon I went to the zigzags at Barmaz. I got rather a good yellow Parnassius apollo, and two bad intermediate ones, like the one you caught. There were a few very small Agriades coridon. On Thursday I walked to Charpigny and found so many butterflies on the way, it took me seven hours. Below Trois Torrents I got three tiny Loweia (Chrysophanus) dorilis, but very old, plenty larger at cross-ways on old road, and one fairly true Epinephele jurtina var. hispulla. Hirsutina damon had disappeared, except one 9. From Collombex to the Rhone, Enodia dryas abounded, and in the alder scrub over the Rhone Bridge-I was surprised to find crowds of fine 'Wood Argus' (some dark and some lighter) and Aphantopus hyperantus, the last rather old, but I got one fresh (very small) specimen. Near Trois Torrents too, I had taken a tiny Polyommatus hylas. At Charpigny yesterday butterflies were more numerous than any day I have been there this year, all of common kinds, Erebia aethiops, Enodia dryas, Epinephele tithonus, Pararge megaera, Polyommatus hylas (one very small), Agriades coridon, Agriades thetis (bellargus), Brenthis dia, Melitaea parthenie, Issoria lathonia, Dryas paphia, Argynnis adippe, one fine and one very old Papilio machaon, and one Pararge maera.

^{*} Does Mr. Fison mean the egerides form of Pararge aegeria?—L.M.F. Yes, probably also ab. pallida.—G.W.

"On Thursday, on the straight Collombex road, I took two small Mazarine Blues—Polyommatus semiargus: one seemed a true var. montana. I could not see Ruralis betulae in the vines at Charpigny; I fancy it is early for it there."

7. London.

"September 1st, 1903.

"If you go to Charpigny do look at the aberration of Ruralis betulae" to which you have given my name. I think it is the one of two similar which I caught S. of Brigue by a chapel W. or S.W. of Napoleon's Bridge. I do not remember ever getting a var. at Charpigny. Have you not mistaken the locality? I am trying here to see some Erebia epiphron, type form, as it would be interesting to know if the fly I took on the Dent du Midi is it. I saw Mr. Kirby at the South Kensington Museum, but the drawer full of Erebia epiphron and vars, which he showed me was so arranged that I could not be quite sure which was the line of epiphron types. Mine is much like one I took for a type, but it has no spots on underside as the South Kensington specimen had. . . . Few of my summer captures are yet set, except those from Champéry."

What are the Tegumen and Valvæ in the Armature of the Lepidoptera?

By G. T. BETHUNE-BAKER, F.L.S., F.Z.S., etc.

Quite oblivious of the fact that he himself has divided up more than one organ that formerly had an "omnibus" name, Mr. Pierce takes me to task for dividing up the large organ called, by Buchanan White, the Tegumen, and for not adopting the use of the term Uncus. Some years ago, finding out the need of designations for different parts of the tegumen, I called the hind ring of this organ, with especial reference to the sternite, the Cingula or "girdle," and I have never used, and do not propose to use, the word "uncus" for the dorsal part of the tegumen, as it is merely a synonym for Dr. White's "tegumen"; that is to say, using it as Mr. Pierce uses it, it is nothing more than a synonym. To prove this we have only to refer to Dr. White's description of it and to his figures. He devotes nearly two pages of the Trans. Linn. Soc., 1877, Zoology, vol. I., pp. 360-362, to this one organ, and be takes as his type for figuring and description in detail Epinephele (or, as we should now call it, Aphantopus hyperantus. The following is an extract:—

"Viewed from above, the tegumen is oval-acuminate in outline, but truncate at the base; the basal half is ovately spherical; and the acuminate apex is somewhat terete, and curved slightly downwards. Nearly half-way between the base and apex a slender, curved, spine-like lobe (which will hereafter be termed the side lobe) is given off on each side, and curves downwards, inwards, and backwards, so that it is not very well seen from above (plate lv., fig. 3, undissected, and fig. 8, dissected out)."

This figure is simply the "uncus" of Gosse as applied to hyper-

antus, there cannot be two opinions about it, it is so definite. Dr. White's name therefore has the priority and must be adhered to.

The description is then continued by the author, viewed from the side and viewed from below, and in each case he gives a figure of the part dissected out as well as an outline figure in profile, which latter will naturally not meet with Mr. Pierce's approval because he prefers an artificial view of the genitalia to that which always obtains in nature. Buchanan White only once mentions the fact that the tegumen encircles the abdomen, when, on page 358, he says, "the tegumen, though most largely developed in the dorsal arc (the tergite) of the segment, is continued as a chitinous ring round the ventral arc (or sternite)"; and then he gives a diagrammatic view of it.

It is quite evident that his whole mind, descriptions, and all his really important figures were bent on and depict the dorsal part, and that the term "tegumen" must take precedence over the term "uncus" for the dorsal armature rather than for the armature in the sternite section of the abdomen, which I named the "girdle" in 1905 (Trans. Ent. Soc., p. 290); whilst in 1910 I adopted its Latin equivalent Cingula, so as to bring it into line with other scientific appellations. In 1905 I also called White's "side lobes" Falces, with the same object in view, these are, I suppose what Mr. Pierce now calls the " socii,"

Mr. Gosse, in dealing with the "clasping organs of the Papilionidae" (Trans. Linn. Soc., Zool., vol. ii., p. 274), evidently feels that he is over-riding Dr. White's previously given name, for he says in reference to the uncus, "the word tegumen adopted by Dr. White, seems hardly appropriate for this spinous, often wiry, point, which is certainly in no sense a cover." It must be admitted that even in hyperantus, the tegumen is not really a cover at all, but to the author who gave the name, it appeared as a cover, and from Mr. Gosse's own admission the two names "cover" the same dorsal organ, therefore the term "tegumen" has priority and I hope will be generally used in the future. So far as I am concerned I shall continue to use Dr. White's name for the dorsal area that he so specifically described and figured, which includes the "uncus" of Gosse. I drew attention to this as long ago as 1890 (Trans. Ent. Soc. Lond., 1891, p. 3). At the same time I would point out that I have acted in accordance with well acknowledged precedent (as a reviser) in sectioning off a portion and giving it the name of Cingula or "girdle." In some families the sternite and tergite parts of the Cingula are almost separated by an articulation. With Dr. White's very definite and accurate description and equally definite figures, there is no question at all in my mind that the term tegumen must be used for the dorsal portion of the armature and that the term uncus must sink to it.

I must now consider Mr. Pierce's use of the term Valvae or "valves," a word that first came into what we might call "modern usage" with Mr. Gosse's elaborate and beautifully illustrated paper on these organs in the Papilionidae (Trans. Linn. Soc. Lond., 1882, p. 265, et seq.). Herold, in 1815, uses the German word "Klappe" or valve, for that organ which we still call the valve in Pieris brassicae. This is the very first definite appellation (perhaps) for a defined portion of the male armature, a portion that was confirmed by Gosse, with a reference to Herold, showing that he recognised the organ in the Pierine as

homologous to that in the Papilionine. I believe Gosse to have been absolutely right in this, I have considerable acquaintance with these organs in both families and I agree entirely with his identification. The term Valrae or valves must therefore be restricted to this special part in the Papilionidae, and in a section of the Pieridae, for the Valra or valve is not the same organ as the Harpago of White.

After describing the valves Gosse goes on to describe another organ lying within the valve, which he designates as the Harpe (Gr. $d\rho\pi\eta$, a grappling iron), and he stated that he considered he was justified in so doing because the valve and the harpe united represented Dr. White's harpago in other Rhopalocera. I would remind my readers that Gosse was a very accurate and exact observer, that he was making these designations with full knowledge of what had already been done, and that he was writing with the intention of Revision in these organs.

He then described the Harpe, thinking that the valve with the harpe were homologues of White's Harpago. In 1911 my friend Dr. McDunnough pointed out that he did not consider Gosse was correct in this conclusion, as he thought the Harpago was a simple valve rather than a fusion of harpe and valve (Ent. News, 1911, p. 187). I quite agree with Dr. McDunnough in considering that the harpago is not a fusion of the harpe and valve, but I am afraid I strongly disagree with the supposition that the harpago is a simple valve. I am convinced, in my own mind, that the harpago is a more fully developed harpe, and that the term Harpago must stand, also that the term Valva must stand, and further, I see no reason why Harpe should not remain in usage also, for it is so different in the Papilionidae from the

ordinary Harpayo that it would be a mistake to sink it.

To prove this point it is necessary for me to make some reference to these organs in the Papilionidae. Some years ago I was uncertain of some of Gosse's points; it was necessary, therefore, to prepare various "mounts" to enable me to clear them up, and I made fresh microscopic slides in different positions, and some of the profile slides I prepared by carefully lifting off one valve and mounting the remains; this method left behind all the organs except the one valve with most, but not all, of the harpe adhering to it. This proved to me what I had already observed, viz., that the harpe is a continuous part of the whole armature, but that the valve (being possibly in this family a later development) would come right away, leaving merely a slight tearing of the exterior chitin, whereas the Harpe was fractured at a point, about a fifth within the valve, the broken portion being quite continuous with the basal part of the Cingula. I prepared several species in this way and all proved this one point, that the valve would come right off, leaving merely a rough abrasion on the exterior, but that the harpe would be fractured from the main internal structure; in one case, P. ormenus, there is a very shallow external sort of socket at the base of the cingula, wherein the basal extremity of the valve fitted and from which it has come away with the slightest abrasion, but the harpe is broken off (a definite fracture) from the structural stem. This shows that the valve is wholly external, and, I think, is clear evidence of a later development than the harpe, which is a continuous part of the skeleton, if I may use the expression.

The name valve, being first given to P. brassicae, it is advisable to see whether there is any homology between these organs in the two

families. If we compare the genus Colias with Papilio, we should be immediately impressed with the similarity of structure of the tegnmen and the cingula with the curious development of the proximal tergite, which in both seems to form a sort of additional "cover," to use Dr. White's expression; the valves are small and different, and are really akin to the harpagones. If, however, we turn to Pieris brassicae and its allies, it will be seen that the dorsal section of the armature is less similar, but that the large valves are quite extraordinarily similar, whilst to the furca is attached a longitudinal, short hornlike sclerite that might well be the initial stages of the Papilionid harpe. Gosse, however, seeing the homology, examined various Pierids, and in some found the harpe as quite a distinct organ within the valve.

These observations point very conclusively to the correctness of both Gosse's and my statements that the valves in the *Papilionidae* and in the *Pieridae* are certainly homologous, and I assume this as a fact. This brings us to the decision as to the use of the name "valve."

It was first used colloquially in 1815 for P. brassicae 3.

It was used again by Burmeister in 1832 colloquially for \mathcal{D} . enphorbiae. De Haan then used it in 1842 for the Papitionidae, again colloquially. Gosse comes next (so far as I have been able to trace), with his memoir already referred to, but, and this is important, he comes in with full knowledge of earlier literature, referring specifically to it, and acting definitely as a reviser. This revision (of terms) cannot be overridden to day with the historical facts as they are. Let me summarise them in a sentence or two.

"Valves" were first used by Herold in 1815 for Pieris brassicae.

The word was then used indiscriminately for a period.

Gosse then as first reviser fixes the word "valves" to the *Papilionidae* and a section of the *Pieridae*, referring pointedly to the homology of the two sets of organs in the two families, this action, therefore, cannot be annulled.

We are thus left to provide a term for the clasps of other families, and this had been done by Buchanan White, who gave the term *Harpago*, plural *Harpagones*, to these structures; this is one of the first scientific appellations given to these organs, and it has precedence over others inasmuch as the valvae and the harpagones are not the same. We thus arrive at the conclusion that:—

White's terms Teynmen, as applied to the dorsal armature, and Harpago, as applied to the lateral ventral armature, must stand, that the term Valvae, or valves, and the term Harpe must stand, as applied to the Papilionidae and some Pieridae: and the term Uncas, of Gosse, if used at all, can only be used for the terminal segment of the group it is referred to, but in view of Dr. White's very clear description and figures, it ought to be dropped as a synonym of the term tegumen. It may appear that I am a little dogmatic in this article, but I am obliged to be so, for with a recent author practically claiming that his designations shall be unreservedly adopted, a little dogmatism is absolutely necessary if future nomenclature is to be put on a right basis.

N.B.—Since writing the above, my friend, the Rev. F. D. Morice, has called my attention to a work published in Switzerland in 1820 by J. J. Hegetschweiler, "Dissertatio inaug. zootom. de Insectorum genitalibus," and also to an appendix on the same subject by Kirby

and Spence in their well-known work, in which certain scientific

designations are applied to definite parts.

I have not yet seen the former work, but it appears that in 1826 Kirby and Spence quite definitely applied the term "Prehensores" to the organs in the genus *Bombus* that are homologues of the "Harpago" of White.

I may have to make further reference to both these works at a

later date.—G.T.B-B.

Collecting at Constantinople in 1914.

By P. P. GRAVES, F.E.S.

Spring began early at Constantinople this year and on my first expedition to Kiathané, on March 23rd, I found Papilio machaon, Callophrys rubi, Rumicia phlaeas, Celastrina argiolus, Colias edusa, and the "whites" including Pontia daplidice well out. The promise of March was well maintained till the end of May, but the first half of June was very rainy and wild along the Bosphorus and after July 24th my collecting came to rather an abrupt end. I was able during the season to add quite a number of species to the Constantinople list, all on the limestone, often near chalk beyond Tuzla, on the Southern coast of the Ismid Constantinople peninsula, a warm, sheltered region, dry and hilly, with a good deal of scrub-wood and well sheltered from the Bosphorus draught. As in my last notes, I will deal separately with my collecting on the European and Asiatic sides of the Bosphorus.

EUROPEAN SIDE.

My first day, March 23rd, has already been mentioned; I may add that on that day I found that the Kiathané ground was uncomfortably near a rifle range and that caution must be exercised in visiting it. I worked it on April 30th and again twice in the first half of May, finding P. semiargus rarer than in previous years, though I took one magnificent large male of the form balcanica, or better balcanica-intermedia, differing from the former as described by Tutt in having faint traces of the orange lunules on the underside of the hindwings. "Skippers" were rare as they have been elsewhere near Constantinople this year. Still I took a couple of fresh Hespevia malvae, not a common species at all near Constantinople, on May 4th, and as many Hespevia armoricanus. Hespevia sidae was uncommon despite the abundance of Potentilla.

After this date I confined myself to the Asiatic side till June, when I paid a series of visits to the Belgrade Forest hoping to improve my series of Hetoropterus morpheus, Lycaena arion, and Bithys quercus, and to come across either Polygonia l-album or Engonia canthomelas which I have always hoped to find near Constantinople. In this I was disappointed as I was in my search for Euranessa antiopa larvæ. I found an excellent locality for Heteropterus morpheus, between Yenikeui and Therapia and near Therapia took a few fine Lycaena arion, but the bad weather of June soon spoiled these two species.

Loweia alciphron var. meliboens was local, but the males were the worse for wear by June 11th, the date of my first visit to Belgrade Forest this year. The Argynnids were advanced, Dryas paphia and

D. pandora well out by June 11th with plenty of Brenthis daphne, and, less commonly Arygnnis aglaia. Of the "skippers," I may note Erynnis orientalis which occurred everywhere singly from the beginning of May till after mid June, and a fine Hesperia malvae ab. taras taken in mid June, a very late date it would seem for so southerly a locality, though I am bound to admit that I have never seen this species near Constantinople in April. Bithys quercus was well out, despite the early June rains, at the end of June, and of a series of fourteen specimens, four males and ten females taken then, six 2 s were more or less of the ab. bellis. All were large specimens, though smaller

than those which I have seen from Cyprus. Pararge roxelana was commoner than in the previous year, and the Satyrids, Satyrus circe, S. hermione (syriaca) and Hipparchia semele very numerous with the common Theclids, Nordmannia ilicis and N. acaciae, though I am afraid I neglected the latter species. I paid two visits to Kütchük-Tchekmedjé and on the first, April 25th, took a short series of Anthocharis belia but little else. Odonata were in great evidence that day, Libellula depressa and Brachytron prateuse (hafnieuse) abounding. I may add that I took the handsome Anax andromache ? in the Belgrade Forest in June. The specimen had just seized a large ? Epinephele jurtina. On my second visit to Kütchük-Tchekmedjé on July 25th, I took a few specimens of the second brood of Erynnis orientalis with various common things and noted frequency of rather worn Macroglossa croatica. I did not come across Agriades (Polyommatus) thersites. After this I had no collecting save for a quarter of an hour in the Club Garden at Constantinople, where I took a couple of Polygonia egea, a species which is not uncommon at Constantinople but which one generally finds on ruined towers, high up on old walls and in similar inaccessible places. When you do see it at Constantinople within reach of you it is generally in the middle of a crowded street where butterfly nets are not carried.

ASIATIC SIDE.

I worked the Gyök-su localities in April, finding Thais polyxena var. cassandra decidedly local and uncommon, and making few observations of interest save an attempt at coupling between a male Loweia dorilis, and a female Rumicia phlaeas. I watched the insects for upwards of five minutes. The female phlaeas kept running along the blades of short grass which covered the spot, followed by the male dorilis, and from time to time stopping, with wings extended and fanning, only to move away as soon as dorilis approached and touched her. I was watching this courtship with intense interest when a vagrant specimen of Colias edusa disturbed the pair; dorilis rose and nearly fell a victim to a dragonfly, I think an immature Libellula depressa, which made a swoop at him and effectually frightened him off.

Larvæ of *Melitaea trivia* were common here as at Kiathané, but most of the larger ones which I took home proved to be stung. The larvæ were not too easy to rear, requiring a constant supply of fresh mullein leaves. On some plants of mullein I found as many as half-adozen larvæ of *M. trivia* which always seemed to me very conspicuous.

I took Melitaea cincia at Yakadjik on April 19th, I think my notes have unfortunately been left with my collections in good hands at

Constantinople, and with it a torn specimen of Hesperia armoricanus, many rather large Leptosia sinapis, and not much else. I visited Yakadjik again on May 11th, and found Aporia crataegi well out quite a fortnight earlier than in 1911, and also took Erynnis orientalis, and Polyommatus amandus, damaged Agriades (P.) thersites, and one or two other things.

But my best work on the Asiatic side was done further away from Constantinople. In the first week of May I paid a visit to the limestone country round Dil Iskelessi, about 33 miles from Constantinople. To reach this place, a little station on the Anatolian Railway between Constantinople and Ismid, it was necessary to leave Haidar Pasha Station at about 8 a.m., reaching Dil Iskelessi at 10.30. The return train, which it was necessary to catch, reached Dil at about 2.35 p.m., so that one had about four hours' collecting, for all the ground was productive the moment one left the station enclosure. It was mostly down-land with patches of cultivation, plenty of ilex scrub and arbutus in places, and by the little river orchards and very unkempt gardens. The people, all Turks save for the inevitable Greek fisherman, were loutish and I think harmless, though I never ventured in close country more than four hundred or five hundred yards from the railway where there were many workmen and a few engineers of the Baghdad Railway Company. Here I made a number of interesting additions to my Constantinople list. In May Thais cerisyi, of which I saw but failed to catch a large and unmistakeable specimen; Colias hyale, of which I caught a single very fresh specimen, and saw another which gave me much exercise; Leptosia duponcheli, for which I was already a trifle late in the beginning of May, but which was here decidedly commoner than L. sinapis; Cupido sebrus (osiris) which occurred sparingly in a grassy valley between two patches of scrub wood, and fine large specimens of Agriades (P.) thetis (bellargus), much larger with paler undersides and less strongly chequered fringes than a series I took at Ventnor early in September, 1913. I took one magnificent underside aberration of A. thetis, which I hope one day to figure. Lycaenids were not numerous but I took a good many species, including with those recorded above, A. thersites one or two blue suffused females, worn Scolitantides baton, Polyommatus amandus, P. icarus, hut not P. semiargus. Plebeius argus (aegon) did not seem to occur on the limestone, but only on a strip of alluvial soil on the railway bank near the bridge. While butterflies were by no means common, there were a great many species in evidence, including, as well as the usual Constantinople insects, Pararge maera, Hesperia sidae, H. malrae, very large and handsome Euchloe cardamines, Anthocharis belia and Iphiclides podalirius, which I have never found very common round the Turkish capital. I tried to find the foodplant of L. dupoucheli and came to the conclusion that it was a species of Lathyrus, with reddish-purple flowers which grew amid the scrub and on the edges of the very ill kept fields hard by. On three occasions I saw females after flying in the usual aimless fluttering fashion of Leptosia above the plant, settle thereon, walk about and make a flexing movement of the abdomen but try as I would I could not find the ova. My efforts to find the foodplant of Aricia anteros were also unsuccessful. This species was not so common this year at Constantinople. generally abundant.

I did not visit this interesting locality in June. On July 7th, I found what I take to be *Hirsutina admetus*, but answering the des-

cription of the Albarracin form given by M. C. Oberthür, in vol. iv. of Lep. Comparée, and in some cases showing an approach as far as the underside is concerned to the form ripartii, which I have often taken in Syria. All the 2s showed more or less the reddish ante-marginal lunules on the upperside of the hindwings, which I have noted in Syrian females of H. poseidon, but have never seen in Syrian ripartii. This insect was not uncommon and I seemed a fair series. On the same day I took a very wasted specimen of Klugia spini, the first I have taken in the Constantinople region, and half-a-dozen L. duponcheli, g.a. aestira, two of which were very yellowish-white indeed. One or two fresh C. sebrus (osiris) were taken here, a second brood no doubt, and two or three A. thetis. I much wondered whether these were the last survivors of the first or the first comers of the second brood. Large specimens of G. rhamni were noted but I took none, which I now regret as they might have proved to be G. farinosa. I was, however, much bothered by a policeman, fat and obsequious who followed me everywhere for some time, puffing and dripping, and urged me to repair to a café where I was, I suppose, to "stand" him some refreshment. I had in the end to give the creature a box of cheap cigarettes to rid myself of him. His prompt disappearance on receiving the "backsheesh" suggested that his fears of some menace to my safety from hypothetical bad characters which, he averred, had prompted him to accompany me on a broiling day were invented, and that he had really been inspired either by thirst or greed.

Mrs. R. Whittall, who with her young family, visited Dil Iskelessi on a yacht in May and again in mid-July, took there in addition to my additions to the local list, a fine male of Everes argiades differing very much from my E. alcetas, taken in 1912 at Yalova, and a small but beautifully fresh Enodia dryas, the latter an interesting record, and I think the first of recent date for Western Asia Minor.

I paid a brief visit to Gyök-su on May 25th, and on that day took a very large and characteristic *P. napi* of the summer form *napaeae*. As *P. napi* g.a. *napaeae* occurred with fresh and fairly typical specimens in the Belgrade Forest in early June, and a good *napaeae* fell to my net on St. Nicolas' islet in the Sea of Marmora, on May 30th, I should like to get the experiences of those who have collected in spring and early summer in S. Europe. Have they taken the two forms together in early summer? I doubt the Belgrade Forest *napi* taken in June having been first brood specimens. *P. napi* was getting worn at Gyök-su in early April, and I am therefore inclined to believe that the vernal form occurs with *napaeae* in early summer, later emergencies being very marked *napaeae*, and only *napaeae*.

In some ways my most interesting collecting was done during a brief, all too brief, yachting trip on the coast beyond Pendik. Pendik, like Kartal and Yakadjik, is on a grey limestone formation covered on the higher ground by schists and sandstone. Beyond Pendik and between it and Tuzla one finds a sandy coastal strip stretching for many miles with outcrops of limestone, and of what appears to be a red conglomerate. Vegetation here is richer than on the dry and treeless hill slopes though there are few trees. On this trip on May 29th-31st, I had a good many hours' collecting in delightful weather on two days. On the first I spent the whole morning near Mavri, a pretty little bay some five miles beyond Pendik, and there took several

Cupido sebrus, including one minute 2, the first Melanargia galathea and Nordmannia ilicis, and many common things, including Adopaea flava, which was well out at this early date for it. In this afternoon I visited St. Nicolas' islet and there took a passable Hesperia sidae, the P. napi g.a. napaeae already recorded, Anthocharis belia, fresh Pyrameis atalanta, not a common insect at Constantinople this year, some very fresh and fine Colias edusa, which seemed to be the first examples of the 2nd brood and a number of Geometrids, some of which I sent to Mr. L. B. Prout for determination. Next day I went further along the coast, and at a place which I will for the present call X, lest some German or Austrian professional descends upon it, found butterflies really abundant on what I should be inclined to call "steppe" country, dry and decidedly sandy, with scattered trees and as a rule sparse undergrowth. Here I found my prize of the year, Scolitantides barius in fair numbers, though few indeed of the males were at all worth capturing. The females were often in beautiful condition and I greatly admired the contrast between the glossy blackish-brown upperside, with its relief of orange lunules near the anal angle of the posterior wings and deep blue powdering on the wing-bases, and the deep dove-grey underside with its full orange band. The butterfly flew rather low, fairly rapidly and seemed to be less given to the habit of darting about in circles than other "blues" which I know, but was perfectly capable of dodging and turning very suddenly and sharply when threatened by the net. It evidently loved dry, sunny, and sandy spots, including those where, to judge from the vegetation, there was much salt in the sand, and seemed partial to thyme flowers. With S. barius I took occasional specimens of A. thersites, mostly going over, P. amandus already on the wane, H. sidae, Erynnis orientalis and on a large mallow plant a female Erynnis so much darker, with the underside so much more distinctly marked and the upperside so much less greenish in general tone than E. orientalis, that I am strongly of opinion that it is E. althaeae. Frankly I do not know the last named insect save from figures and specimens in the Museum at South Kensington, but to judge from these figures and specimens it might possibly be mistaken by a collector, who did know the difference in the shape of the antennal clubs for E. alceae. But I cannot imagine the possibility of any E. orientalis that I have taken being confused for a moment with E. alceae, while the female specimen I have described did certainly bear some resemblance to it at first sight, With these interesting insects were hosts of fine A. Hava of both sexes. worn P. icarus, M. didyma, M. trivia going over, some huge C. edusa, larger and finer than any I have yet taken, A. belia and occasional N. acaciae. I hoped to find Chilades trochilus on this favoured spot but failed. After five hours' collecting I returned to a repast in which whitebait and fresh red mullet were a leading, and, as the newspapers say, a popular feature. Next day the weather broke: floods, thunderstorms, and wind descended on the Sea of Marmora and I was back in Constantinople. On June 6th I visited the Beikos woods opposite the Belgrade Forest hoping to get M. athalia var. mehadiensis, but not one did I see. The woods were dripping wet and save for a few very fresh and fine Dryas paphia, Brenthis daphne, and the ordinary woodland insects, such as N. ilicis and Coenonympha arcania I saw nothing flying. On July 16th I went on another yachting trip, this time to

the white cliffs of Ayasma between Tuzla and Dil Iskelessi. Here I took a couple of Cupido sebrus, and quite a good series of II. admetus. A good female of Pararye roxelana taken in an orchard near the shrine from which Ayasma (Agiasma) derives its name, and one or two P. maera were also among my captures. I may note that Mrs. Whittall took a single S. bavius near here in May. My search for Polyommatus meleager on Prinkipo Island at the end of June was a complete failure. I was too late I expect, that is if P. meleager is still to be found there.

THE SOUTHERN MARMORA.

During a yachting cruise in June, Mrs. Whittall brought back a fine series of Melanaryia larissa closely approaching var. syriaca from Artaki on the south coast of the Sea of Marmora, and several fine specimens of Hipparchia briseis with Euranessa antiopa from Marmora Island, Melitaea athalia var. mehadiensis from woods on the south coast of the Gulf of Ismid, and Lampides boeticus from near Yalova. She also received a very fine specimen of Gonepteryx cleopatra from Smyrna.

To my Constantinople list must now be added the following species:

—(?) Erynnis althaeae, Klugia spini, Everes argiades. Cupido sebrus,
Agriades thetis, Hirsutina admetus, Scolitantides barius, Thais cerisyi,
Leptosia duponcheli, Colias hyale, Enodia dvyas, and Hipparchia briseis,
specimens of the latter having been taken, so Mrs. R. Whittall tells me,
near Dil Iskelessi. Should I return to Constantinople I hope to make

a few more additions to the local list in happier years.

Notes on the Taxonomic Value of the Genital Armature in Lepidoptera.

By the Rev. C. R. N. BURROWS, F.E.S.

I myself executed (with one exception) the preliminary drawings for all the figures in Mr. Pierce's Genitalia of the Geometridae. These drawings were made by Camera Lucida, with the same apparatus and the same Microscope objective throughout the series. Mr. Pierce and I, in continuous consultation, completed the drawings. I passed his ink drawings, with one exception, where we disagreed as to the obscure details of an exceptionally complicated species.

All this is to be read in the Preface to Mr. Pierce's Book.

I share, therefore, with Mr. Pierce, Mr. Bethune-Baker's somewhat severe condemnation, in the January Number of the Entomologist's Record, of these same figures. I am quite sure that Mr. Bethune-Baker did not mean to write harshly or unkindly, and I trust that he and those who read this will acquit me of the smallest wish to be harsh or unkind.

I very earnestly deprecate the suggestion that we have drawn "what he wants his readers to see," or "what does not exist in the object," and further that our drawings depict "a flattened and distorted object." To the latter quotation I might retort "Tn quoque." I will return to this subject.

The proof of our honesty is in every collector's hand. To have published fictitious drawings would surely have been foolishness of the

worst kind.

My mounts, many hundreds in number, are entirely at the disposal of anyone who cares to travel down to Mucking to examine them, and I have no doubt but Mr. Pierce will, with equal pleasure, say the same. More than this I am willing (within reasonable limits of course) to mount for any one who wishes it, any Geometrid genitalia which may be called in question, on condition that at least two males and one female be sent; in order that I may have an opportunity of making apparent, the superiority of the Vertical over the Profile position. Again, I have no doubt but, Mr. Pierce will be equally willing to do the same. Or, I will submit such mounts to Mr. Tonge, Mr. Noad Clark, or other Photographic expert (if such there be) that he may make a photograph free from bias. Or again, I will submit a set of selected mounts for examination by any Entomological Society.

I do not think that I can do more than this to prove my own

conviction as to the honesty of the figures in question.

As I am thus drawn into this controversy, I may, perhaps be allowed to place on record my own opinion upon some of the points in question, taking such in the order followed by Mr. Bethune-Baker.

1. Photography. I notice that this method of reproduction is not preferred by all scientists. In the Transactions and Proceedings of the Entomological Society of London, 1912-13, I find (excluding colour plates, plates of imagines, landscapes, etc.), 50 drawings to 20 photographs. In those for 1913-14, 15 drawings to 13 photographs, and in the current Volume, 13 drawings to 30 photographs, making for the period covered, 78 drawings to 75 photographs. It may be said that these plates represent the views of but very few individuals, but there stands the fact. I remember that our dear old friend J. W. Tutt, just before his fatal illness, baving before him the completed photographic plates of my series of Hydræcias, deliberately called in the aid of a hand artist to produce understandable pictures. My own objections to the Photographic method of illustration are:—

(1) That each figure represents a single individual, perfect or

imperfect.

(2) That it is necessary to flatten unduly (squash) the specimen

to be photographed.

(3) That it is not possible to make a detail picture of thick chitin and thin integument with the same exposure. One or other must be sacrified unless the object be unduly thinned or "squashed."

I emphasize the flattening of the specimen, which is necessary to secure, as far as possible, that all the object shall be in the focal plane and thin enough to agree with the focal depth, of even the best of microscope objectives.

(4) That it is true that superposition of several organs does obscure the true structure. I can produce a mount in which it would be quite

possible to have, in the profile 12, separate surfaces at least.

2. The profile position. How Mr. Bethune-Baker can claim this at the more natural position I cannot imagine. Is it natural for a Lepidopteron to have its final segments pressed flat with a fold all along the dorsal and ventral centres? The Natural position (in life I presume) depends entirely upon the point of view of the observer, and upon the conditions. If I look upon the side, it is true that I get a profile view, but the parts are not squeezed together. If

I look vertically I get a vertical view. In any case, when the organs

are in use, the genitalia are open-not shut.

Again, what advantage does the profile view give? It shows the contour of the valres*, a side (and strictly limited) view of the tegumen* with its ring formation crushed (or often broken) and the penis*. All these points are equally or better shown by the vertical position, and a great deal more. For Mr. Pierce and I have pointed out that the valves, tegumen, and penis are not the "be all and end all" of the matter, but that there are other structures hitherto neglected which belong neither to valve, tegumen, or penis. These structures arising from the central area of the genitalia, between the valves, are entirely concealed by the profile position, though they must be of the greatest interest and importance. Reference to Petersen's Monograph upon "The Genus Eupithecia" (Iris, Band. xxii., 1909) will illustrate my meaning.

In all his drawings of the single valves in profile position, the organs, which belong to the central area of the genitalia, are shown as though part of the valve. The reason is plain. The imaginal abdomen is cylindrical, but the two final segments are practically hemi-cylindrical. In the profile mount the dorsal half cylinder must be flattened, while the approximately flat ventral surface must be either "bulged" or crumpled up. The suggestion that the examination of the central area in the profile specimens may be attained by the mutilation of the object, I cannot accept as scientific. Dissection is all very well, and necessary, but it will not, in the present case, help the observation of the organs in "a natural position."

I do not wish to seem to undervalue the profile view. We get it during the preparation of the object. Nor do I despise the profile mount, which is very useful. But 1 do earnestly uphold the vertical

as showing more, and therefore more useful.

And I further assert that the profile method of mounting is more worthy of a beginner than of a competent scientist. It is vastly more easy and more speedy. It requires less care, less patience. I would undertake to instruct, any but the clumsiest youth, to prepare a passable profile mount, in half-an-hour. I could mount thus as fast as hand and eye could work. But it is not thus Science works. Witness, for instance, the long patience of the Chemist, the Astronomer, the Physicist, etc.

In this matter I personally entirely disagree with "some of the most able Continental insect Morphologists." Mr. Pierce and I cannot be ignorant that "Systemists who are really eminent to-day do not believe in the Study of the Genitalia" as an aid to their work.

^{*} I use these terms advisedly.

Value. Mr. Bethune-Baker accepts the authority of Dr. McDunnough, so do I, here. Dr. McDunnough affirms that this term has been used from before the year 1815, and gives the authorities. Amongst these is Burmeister, who applied the term, as does Mr. Pierce. "Clasper" seems to have come in with Scudder, 1870.

Tegumen. Reference to G. Buchannan White's paper and diagram (Trans. Linn. Soc., ser. 2, Zool., vol. 1., plate 55; figures 10, 11, 42) prove that he meant by this term the whole eircle or ring, except the "saccus," which, in his dried specimens, he could not set.

Penis. "The greater includes the less."

Surely there can be no objection to an Author who corrects his previous mistakes?

So much the worse for them, I say! But I take it that M1. Bethune-Baker is on our side, if he were not he would scarcely be wasting time

upon a useless job.

This investigation appeals naturally, at present, to a limited number of Entomologists. Is it not quite possible that the two Publishers expected to dispose of the twenty copies of Mr. Pierce's book?

May I, in conclusion, suggest to Mr. Bethune-Baker that he mount, in his profile position, specimens of, e.g., an Empithecia, Melanippe procellata, Encosmia certata, Collix sparsata, or Bapta bimaculata—photograph them, and publish the result with his explanation.

WURRENT NOTES AND SHORT NOTICES.

The December Magazines contain the following:-

In the *Ent. Mo. May.* Mr. E. A. Butler announces an addition to the British List of Hemiptera, *Lygns rubicandus*, taken by Mr. H. F. Fryer by sweeping in a ditch of mixed herbage in Cambridgeshire.

On January 20th, the Annual Meeting of the Entomological Society of London took place. Mr. G. T. Bethune-Baker, F.L.S., the President, for the past two years, completed his term of office and read the Annual Address. The subject was "The Development of Clasping Organs in Insects," and was illustrated with a very large number of lantern slides, some 90 or more of which have been reproduced on twelve half-tone plates, to be issued with the Transactions. mencing with the consideration of the characteristics of the genitalia of the Thysanura, the address went on to discuss these organs in the Orthoptera, the Odonata, the Trichoptera and the Coleoptera. The Lepidoptera Heterocera were next dealt with, the Micropterygidae, the Hepialidae, the Cossidae, the Anthroceridae (Zygaenidae), the Psychidae, the Aegeriidae, the Drepannlidae, the Lithosiinae, the Arctiinae, and the Notodontidae, in more or less detail. The Lymantridae, the Lasiocampidae, and the Saturniidae, came next with a few Geometridae. Consideration was then given to the various families of the Diptera, a few Hymenoptera and one or two species of ant. This paper will be a very useful introduction to a study of the ancillary appendages of other orders in comparison with those of the Lepidoptera, illustrated as it will be by twelve plates, with figures nearly all in profile and thus more useful to the ordinary worker, who wants readily and easily to grasp the significance of the various developments of those organs.

The last issue of the "Transactions of the Entomological Society of London" contains but four papers. (1) Description of South American Micro-Lepidoptera, by Edward Meyrick, B.A., F.E.S.; (2) A contribution to the Life-History of Agriades thersites, by T. A. Chapman, M.D., illustrated by twenty-eight plates, two of which are coloured; (3) On a new form of seasonal (and heterogeneutic) dimorphism in Agriades thersites, by T. A. Chapman, M.D., with one plate; and (4) Notes on the Taxonomic value of Genital Armature in Lepidoptera, by G. T. Bethune-Baker, F.L.S., with eleven plates. In addition there are 32 pages of interesting matter concerning the exhibits and discussions which took place at the ordinary meetings of

the Society.

Mr. H. S. Fremlin, F.E.S., is engaged under the military authorities in training sanitary officials to attend the expeditionary force in France. Some hundreds have already passed through his hands. He recently received his promotion to Major.

Lieutenant H. F. Stoneham, F.E.S., has recently come home

wounded, but is, we hear, rapidly recovering.

Dr. Malcolm Burr has recently accepted an appointment in Russia, where he has numerous friends. His knowledge of the Russian language will be of great service to him when he takes up his duties there. The British Museum (Natural History) has acquired Dr. Burr's well-known and rich collection of the Dermaptera. There are somewhere about 120 or more type specimens and a large number of co-types. The whole collection contains a gross total of some 800 species and is a valuable addition to the South Kensington Museum.

We understand that arrangements have been made by the Lepidoptera Committee of the London Natural History Society for a member of the Committee to attend at Salisbury House at 6.30 p.m. on meeting nights (1st and 3rd Tuesdays in each month, except July and August) for the purpose of giving advice and assistance to young

entomologists, whether members of the Society or not.

The "Verrall" Supper took place on January 19th at the Holborn Restaurant as usual. Some hundred guests assembled from 6.30 onward in the "Entomological Salon," and old friends met old friends, and new friends were welcomed in the conversazione which preceded the repast. Shortly after eight o'clock supper was served. Among

those who were present were the following:—

R. Adkin, H. E. Andrewes, S. R. Ashby, F. Balfour-Browne, E. C. Bedwell, G. Bethell, G. T. Bethune-Baker, F. Bouskell, H. Britten, Dr. Burr, D. A. J. Buxton, P. A. Buxton, A Cant, Prof. J. W. Carr, G. C. Champion, R. J. Champion, Dr. T. A. Chapman, F. Noad Clarke, J. E. Collin, Joseph Collins, W. C. Crawley, Bruce F. Cummings, B. G. Curwen, F. B. Carr, Dr. Dixey, A. W. Dods, H. Donisthorpe, J. H. Durrant, F. W. Edwards, Stanley Edwards, E. A. Elliott, H. Willoughby Ellis, Dr. Eltringham, Dr. Fremlin, G. E. Frisby, F. W. Frohawk, J. C. F. Fryer, C. J. Gahan, Lachlan Gibb, A. E. Gibbs, E. E. Green, H. M. Hallett, A. H. Hamm, B. S. Harwood, P. Harwood, Prof. Image, O. E. Janson, O. J. Janson, F. B. Jennings, A. H. Jones, Dr. K. Jordan, T. W. Kirkpatrick, Dr. G. B. Longstaff, W. J. Lucas, R. W. Lloyd, H. Main, G. Meade-Waldo, A. W. Mera, Rev. F. D. Morice, Claude Morley, F. Merrifield, S. A. Neave, C. Nicholson, W. North, Prof. G. Okajima, G. T. Porritt, Prof. E. B. Poulton, R. M. Prideaux, Hon. N. C. Rothschild, Hon. W. Rothschild, II. A. Saunders, W. Schmassmann, A. J. Scollick, H. Scott, W. E. Sharp, Dr. J. Shiraki, V. E. Shaw, W. G. Sheldon, A. Sich, E. A. Smith, E. Step, Rev. J. E. Tarbat, Rev. C. F. Thornewill, J. le B. Tomlin, A. E. Tonge, H. J. Turner, Comm. J. J. Walker, F. C. Woodforde, L. H. Bonaparte Wyse, Rev. Waterston.

SOCIETIES.

Entomological Society of London.—October 7th.—Election of Fellows.—Dr. Leslie C. Coleman, D.Sc., Dept. of Agriculture, Banga-

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lore, Mysore, India, and the Rev. Frederic S. F. Jannings, Warmsworth Rectory, Doncaster, were elected Fellows of the Society. Abnormal NEURATION IN MELITAEA AURINIA.-Mr. O. E. Janson exhibited an abnormal specimen of Melitaea aurinia, taken in Kent, in which six of the nervures were almost symmetrically deficient on either side. CHLOROPERLA VENOSA, STPH., AND C. GRAMMATICA, PODA.—Mr. G. T. Porritt exhibited a series of C. venosa, Stph., taken by Prof. Carr and Mr. Mottram in the river Trent near Nottingham; also a series of C. grammatica, Poda, for comparison. Abnormal Hymenopteron, etc.— The Rev. F. D. Morice exhibited a specimen of Crabro (Lindeinus) albilabris, F., 2, with abnormal ocelli; also a photograph, from nature, of eggs in situ, laid in a rose-stem in a double row by Vallisnieri's "Mosca dei Rosai," Arge pagana, exactly as in the author's original figure. Gynandromorphous Plebeius argyrognomon, etc., from Swit-ZERLAND.—The Rev. G. Wheeler exhibited a gynandromorphous specimen of Plebeius argyrognomon taken by him in the Val Maggia on July 13th this year, also an extreme example of ab. persica of Polyommatus icarus taken on the marshes at Altmatt, on July 11th, and a 3 of Pararge maera with symmetrical deeply concave costa of both forewings, taken on the Via Mala on July 17th; also a well-marked series of Pieris manni from Vernayaz, taken on July 5th this year. Rumicia PHLEAS, ETC., FROM NORTH KENT.—Mr. Prideaux brought for exhibition a very perfect example of Rumicia phlaeas ab. schmidtii, of a pale yellow colour; also a 3 Polyommatus icarus ab. obsoleta, and some very blue ? s of the latter species, all taken in the neighbourhood of Brasted, N. Kent. Platyphora Lubbocki, Verrall, and Aenigmatias blattoides, Meinert, one species.—Mr. Donisthorpe exhibited specimens of Platyphora lubbocki, Verrall, and Aenigmatias blattoides, Meinert, which he had reared in a nest of Formica picea, Nyl., taken in the New Forest in July last. He pointed out that he believed he had proved that these two flies were the 3 and 2 of the same species. Noteworthy Lepidop-TERA. - Mr. L. W. Newman exhibited : - (1) A curious gynandromorphic Polyommatus icarus, the right fore-wing being 2 and the remaining three wings 3 except for one orange lunule on each of the hindwings. (2) A curious Zygenid of doubtful species, being small and having four spots only. (3) A short series of Epicnaptera ilicifolia, bred from the wild 2 taken May, 1913, at Cannock Chase by Mr. Oliver. (4) A pair of beautiful Neuria saponariae from the Cork coast, the groundcolour being a rich pink instead of the usual yellowish colour. The following papers were read:—"Contributions to the Life-History of Polyommatus eros," by T. A. Chapman, M.D., F.Z.S., F.E.S. "Parthenogenesis in Worker-bees at the Cape," by R. W. Jack, F.E.S. "Description of New Species of Catasticta," by W. F. H. Rosenberg, F.E.S. "Revision of the Species of the Genus Odynerus (Hymenoptera) occurring in the Æthopian Region," by G. Meade-Waldo, M.A., F.E.S. "Some Remarks on the Coccid Genus Leucaspis, with Descriptions of two New species," by E. Ernest Green, F.E.S.

October 21st.—Messrs. L. D. Cleave, Dept. of Science and Agriculture, Georgetown, British Guiana, and J. R. Menon, B.A., Trichur, Cochin State, South India, were elected Fellows of the Society. The death was announced of Mr. William Warren, M.A., F.E.S. Abnormal Anthrocerids.—Dr. T. A. Chapman exhibited three abnormal specimens of Anthrocerids, and read notes. Variation in Dianthecia

BARRETTII AND BOARMIA REPANDATA.—Mr. L. W. Newman exhibited a long and varied series of Dianthoecia barrettii, bred from wild larvæ collected in Co. Cork, and from dug pupe from S. Devon. Hybrid Amorpha populi and Smerinthus ocellatus.—Mr. A. E. Tonge exhibited a specimen of the hybrid A. populi & XS. ocellatus \, bred ab ovo, which emerged September 11th, 1914. Mr. Tonge said he was informed that this was the first larva from the crossing which had hatched normally. ABERRANT RUMICIA PHLEAS .-- Mr. Tonge also exhibited a specimen of R. phlacas, taken on Deal Sandhills in September, 1914, without the red marginal band on the hindwings. STYLOPISED SAND-WASP.—Mr. G. Meade-Waldo exhibited a stylopised specimen of the Sand-wasp, Ammophila tydei, Guill., from South Africa. South European Butterflies.—Mr. E. B. Ashby exhibited some South European butterflies, chiefly from the south of France. XANTHIC PSILURA MONACHA.—Mr. Rippon exhibited a variety of P. monacha, which, as far as he had been able to ascertain, had not been previously recorded. The variation consists in the body being banded with black and yellow instead of black and crimson. TRIPHENA FIMBRIA. -Mr. Rippon also exhibited five specimens of Triphaena fimbria, bred from Pamber Forest larva. South Russian Heterocera.—Mr. A. H. Jones exhibited a number of moths from Sarepta, and read notes. Lycænids showing some degree of Gynandromorphism.—Dr. E. A. Cockayne exhibited:—(a) Thirty-eight gynandromorphous Agriades coridon from Royston. (b) Two 9 s of A. coridon, from Royston, showing streaks of blue. Neither showed any signs of androconia. (c) One gynandromorphous Polyommatus icarus (Co. Clare, 1914), predominantly female ab. caerula, but with streaks of male colour on the right forewing and both hindwings. The following paper was read :- "On Hawaiian Ophioninae (Hymenoptera, Fam. Ichneumonidae)," by R. C. L. Perkins, M.A., D.Sc., F.E.S.

REVIEWS AND NOTICES OF BOOKS.

Some South Indian Insects and other Animals of Importance CONSIDERED SPECIALLY FROM AN ECONOMIC POINT OF VIEW. By T. Bainbrigge Fletcher, R.N., F.L.S., etc., Imperial Entomologist to the Government of India. Published in Madras. Price 9s.—The author of this handsome work is an old correspondent of the Entomologist's Record, and probably known to many readers as a valued contributor to our knowledge of the "Plumes." The present book is one of those large and comprehensive works on the Fauna which the Governments of India have for a long time been bringing out. Mr. Bainbrigge Fletcher was for some years and until 1912 Government Entomologist in Madras. Had it not been for his appointment in that year to the post of Imperial Entomologist to the Government of India the publication of the present work on South Indian Insects would have been deferred for some years, pending a more thorough investigation into the life-histories of those insects of greater economic importance. Much of the necessary material having been accumulated, however, it was considered better to issue it now, as a basis for further work, rather than defer it for a possibly indefinite period.

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There are 50 coloured plates, mainly the work of native talent, and no less than 440 text figures, many of them composite, showing the various metamorphic stages of the life-histories. There are of course chapters on General Structure of Insects, Classification and Nomenclature, and Metamorphosis. But probably the reader will be more interested in the chapters which give large selections of facts from the Indian fauna bearing on the more modern aspects of Entomology, the Means of Defence in Insects, Communication amongst Insects, Tropisms (response to stimulus of light, temperature, gravity, air, etc.), Insects and Plants, Symbiosis and Parasitism, and the Balance of Life. Several further chapters treat in detail with the subject of Insect Pests, Control of such Pests both of the Growing Crops and of Stored Products. A chapter on Household Pests naturally leads to others on Insects and Disease, Beneficial and Useful Insects. Probably what is unusual in a book on Entomology is to find a chapter on Some other Animals, which deals with enemies of crops in all classes of animals, from the elephant to the snake, and even the fish. The last half of the volume, the more profusely illustrated portion, deals with the insects of all orders of commoner occurrence and whose control is of more or less importance to the agriculturist. Although written primarily for residents in India, there is much in the volume which should ensure a wider circulation, and we congratulate the author on the all-round excellence, not only in the method of presentation and on the value of the matter selected, but also for the illustration and general mechanical get-up.-H.J.T.

THE GENITALIA OF THE GEOMETRIDE OF THE BRITISH ISLES, by F. N. Pierce, F.E.S. (110 pp., 48 plates, with 450 figs.). Price 10s., post free, from the author.—[Concluded.] The term "Furca" has been previously applied to the structure formed by the fusion of the two extensions from the base of the valva, and called the "Sacculi" by Mr. Pierce. In the Transactions of the Entomological Society of London for 1910, Mr. G. T. Bethune-Baker published a "Revision of the African species of the Lycaenesthes group of the Lycaenidae." On page 6, in a key to a figure for the description of Genitalia, we read "e. Furca; consisting of two arms from a common base in the harpagones, the support to the penis." There are ten plates of figures of ancillary appendages attached to this paper, many of which show very plainly a structure similar to that of Ennomos autumnaria given in plate iv. Hence, although Mr. Bethune-Baker did not name the processes (Sacculi of Pierce), he named the structure formed by their anastomosis as the "Furca." Possibly, since he, Mr. Bethune-Baker, had up to that time largely confined his investigations to the Lycaenidae, he was not aware that in the Geometers the Furca was represented by two quite separate processes. Hence Mr. Bethune-Baker is the author

of the term "Furca," June, 1910.

The consideration of these two papers and the careful examination of the plates of figures of genitalia there given, brings us to another point, which was strongly suggested by the study of the above-mentioned slides and numerous slides of profiles, and that is that diagrammatic figures are not sufficient, and especially if those figures be of the structures "cut" and "spread." By all means let us have the diagrams, but only as an elucidation of the photographs. Granted that the photograph gives too much or not enough, these defects can

always be rectified by a diagram. However clever the draughtsman may be he "sees" into his sketch a personal bias, and often omits what would modify the impression which his drawing produced, or emphasises too greatly points with which he is obsessed at the time. How can one get an idea of the use or purpose of the various structures by a "cut and spread" method only? While many of the small appended structures can be pourtrayed better as to shape and origin by this method, one must have a profile to see the relative positions Take the "furca" for example. of parts when naturally arranged. One can get no idea what the use of this structure is in E. autumnaria from plate iv., one can only see the shape, points of origin and relation to the harpes (harpagones). But if one looks at the profile views, say on plate v., attached to Mr. Bethune-Baker's paper, one can at once see how strongly the inference is that the Furca is a support to the penis. We want profiles, we want photographs, and we want diagrams, but the diagram must be what it is in all branches of science, a biassed illustration of particular points, either as to shape or relative position, to elucidate points of study, not to be the final result of the

The author dealing with the 3 and 2 structures naturally gives us the classificatory results to which they appear to him to point, without, we imagine, in any way wishing to controvert the principle so well expressed by our late Editor, when he wrote in 1909 (Ent. Record, vol. xxi., p. 92), "Of course a satisfactory classification must take account of all characters, not only of one instar, but throughout the whole life cycle. These appendages, however, present nearly as large a group of characters as those usually used in making classifications . . . so that the addition to the usual material for classification of a knowledge of these organs is rather doubling our

resources than adding one item to them."

When one comes to consider the vast amount of patient work involved, the intricate care in manipulation to secure that the preparations may be readily comparable, and the time which all this involves,

one can scarcely express sufficiently the admiration felt.

It can be truly said of this work that it is another "land-mark in the advance of a more complete knowledge of our British Lepidoptera," and as the British fauna, although limited in species, is typical of almost all the Palæarctic genera, these new facts accumulated and classified, must have an influence far greater than in the area which

the book nominally deals with.

We had almost forgotten that an early announcement of the volume coupled the name of one of our colleagues, the Rev. C. R. N. Burrows, with that of the author. It may be said that it was Mr. Burrows' own wish that his name should not appear on the title-page with that of the titular author, but we know that the investigation has been a joint one. Independent preparations have been made with every species, subsequent comparisons always carried out, with further investigation and comparison if thought necessary, and discussion on every point of apparent divergence. In fact, Mr. Burrows has equally shared with Mr. Pierce the work of investigation, but the author has made himself alone responsible for the facts and opinions as they are put before the public.—H.J.T.

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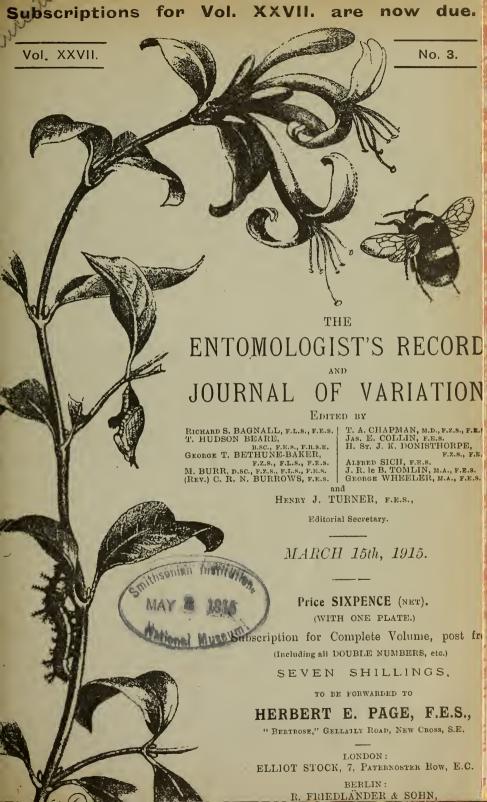
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THE SEASON OF 1914 NEAR POLLOKSHIELDS, ETC.

The Season 1914 near Pollokshields, etc.

By ANDREW ADIE DALGLISH, F.E.S.

Though we had exceptionally long spells of fine weather during the Muse past season, and the year as a whole might be considered a very fine one, it was, however, spoiled to a great extent for collecting purposes by the prevalence of cold biting winds which would spring up in the evenings, even after a long fine day of brilliant sunshine.

The Saturday afternoons fared little better, as on many occasions the wind was blowing half a gale. Under these conditions one was forced to seek the most sheltered corners in the deepest glens, or some secluded spot in the thickest woods, but even there the searching winds had found its way, and little or nothing could be beaten from foliage,

or found at rest on the rocks or tree trunks.

The spring was very cold and early insects scarce. Phigalia pedaria was out on February 23rd, when I took a 3 and 2 at Johnstone, and and on the same date found hibernated specimens of Depressaria heracleana and Cerostoma radiatella, both under loose bark. Hybernia marginaria occurred at the same place on March 7th, and Polyploca flavicornis on the 21st. On the 28th a couple of Malenydris multi-

strigaria were taken at rest near Milngavie.

I spent three days at Arrochar, from April 11th to 13th, but the weather was very stormy with cold sleety showers. Insects were difficult to obtain. Four fine specimens of Tephrosia bistortata were taken from the larch, but owing to the high wind blowing, these were obtained from crevices low down on the trunks and exposed roots. A couple of Lobophora carpinata were found in the same manner, and a single Depressaria arenella was netted. I tried sugaring one evening, but with little success, a very few Taeniocampa pulvernlenta, T. gothica, T. incerta, T. stabilis, and Pachnobia rubricosa, being the total to visit Eriocrania unimaculella and E. semipurpurella were common at Milngavie on the 18th; and a few E. purpurella and Anticlea badiata at Johnstone on the 26th.

Eriocrania subpurpurella was taken from oaks at Johnstone where Lithocolletis quercifoliella was abundant. On the 16th an afternoon on the Gourock Hills, did not produce much, a single ? Saturnia paronia was found at rest on the heather, Ematurga atomaria was abundant, but Eupithecia saturata was only beginning to emerge. Plutella cruciferarum, and Elachista rufocinerea were fairly common. The 19th being a holiday, I travelled to Luss, Loch Lomond, and found insects becoming more plentiful, Callophrys rubi was in fair numbers and in fine condition, but difficult to capture owing to the rough nature of the ground. The other species taken were, Cidaria corylata, Eustroma silaceata, Lampropteryx suffumata, Lozogramma petraria, Coremia ferrugata, Xanthorhoë tristata, X. sociata, Lithocolletis cramerella, L. alnifoliella, Micropteryx aruncella, and Gelechia triparella, while single specimens of Euclidia mi, and Prothymnia viridaria turned up. On the 26th I was again on the Gourock Hills, but it was blowing a gale, and all the insects I obtained were taken by creeping along the lea side of a wall. I however managed to gather in, by boxing them from the wall, several Malenydris salicata, and a fair number of Eupithecia satyrata. Gelechia ericetella was common, and several nice

March 15th, 1915.

2 s of Ematurya atomaria were obtained in the same manner. In a wood at the foot of the hill Micropteryx anreatella and Gracilaria

syringella were boxed.

June 3rd. Hepialus hecta made an early appearance at Johnstone. A single Enpithecia luriciata was dislodged from a fir, and shortly after two fine black varieties of E. castigata were taken, and single specimens of Monopis rusticella and Elachista albifrontella. On the 10th, at Johnstone, Bupalus piniaria, Crambus pratellus and Scoparia ambigualis were common, while Lithocolletis faginella, Lampronia rubiella, Incurraria muscalella and Elachista obscurella were also taken.

An evening at Crookston on the 11th produced two fine specimens of Eupitheeia pyymaeata, a single Tinea lapella, while Opisthograptis luteolata, Xanthorhoë montanata, Hepialus Inpulina, Argyresthia pyymaeella, and Plutella cruciferarum were common. On the 12th I was again at Luss, and this being an exceptionally fine day insects were very plentiful. A couple of fair Pionea decrepitalis were boxed on the hillside. Fine specimens of Acidalia remutaria, Lomaspilis marginata, Coremia designata, Cabera pusaria, Asthena Inteata, Eulype hastata, Micropteryx calthella, Tortrix (Eulia) ministrana, Ancylis unguicella, A. uncana, and A. mitterbacheriana, while single specimens of Phragmatobia fuliginosa, Swammerdammia heroldella and Incurraria muscalella were taken. Two specimens of Drepana falcataria were dislodged from a birch, and both captured, one in the finest condition, the other a mere rag. Crambus hortuellus was very abundant in the old slate quarries, and Argynnis selene was found settling down in the late afternoon, when five or six specimens could be taken in groups at the one time on clumps of brackens, and dwarf sallows. A fine specimen of Xanthorhoe montanata was boxed with the band on the wings almost obsolete: and a single Diacrisia sannio (russula) was chased and captured, but received its liberty again owing to its tattered condition. On the 15th at Crookston Bucculatrix nigricomella, Ornix betulae, Coleophora albicosta, Chrysoclista atra, Argyrotoxa conwayana, and Lampronia quadripunctella were obtained: while after dusk Dianthoecia cucubali, Abrostola tripartita and Petilampa arcuosa were captured. On the 17th, at Milngavie, Hydriomena impluviata was abundant on the alders on the banks of the Allander, the majority of the specimens being black. Eupithecia satyrata, Coremia unidentaria, Lithocolletis kleemannella, and Cabera pusaria were abundant, while specimens of Cerostoma vittella and Lithocolletis spinolella were boxed. On the 18th at Johnstone, Scoparia dubitalis was abundant and variable, Argyresthia conjugella, Gelechia terrella and G. proximella were taken along with a few Lithocolletis sorbi. Whistlefield on the 20th, amid a downpour of rain, I boxed from tree trunks a few Tischeria complanella, Argyresthia brockeella and Tinea semifulrella, while Scoparia ambigualis was very common. During the one short blink of sunshine a single Pyrausta cespitalis appeared. On the 27th I again visited Whistlefield with the hope of taking Perizoma blandiata, but this was another afternoon when the wind rose to half a gale, and only a single specimen, which was actually blown into the net, was taken. Xanthorhoë tristata was still in good condition and a single Gelechia sororculella was taken.

^{*} Now known as Blastodaena hellerella.—A.S.

July 3rd. I had a whole day at Irvine; and this being a fine, warm day, insects were again abundant. A number of Lycaena icarns were taken with the object of obtaining aberrations, and in this I was very fortunate in taking two nice forms of undersides, and a female with prominent pale blue-grey discal spots on the forewings. Coenonympha pamphilus, Nymphula stagnata, Ortholitha plumbaria, Salebria fusca, Gelechia senectella, Perizoma alchemillata, and Platyptilia gonodactyla were also taken. Single types of Agrotis strigula and Miana fasciuncula were caught on the wing in the afternoon.

A visit to Brodick, Arran, from July 9th to 17th, produced something better in the insect way. Epinephele jurtina (janira) was in magnificent condition, several &s with two well-developed spots on the underside of the hindwings being obtained, while another with the left forewing bleached was captured. A single but poor Coenonympha tiphon was caught on the moor. About a dozen Plusia interrogationis fell to the net one forenoon, along with several Agrotis strigula and a couple of Anarta myrtilli. A number of Palimpsestis duplaris were shaken from birch. A single and large Abrawas grossulariata was taken far up the hillside, I have never taken this species in a similar situation in Clydesdale before. Venusia cambrica was fairly common in the birch glen on the old Lamlash Road; here they seemed to prefer the smooth barks of two or three large beech-trees, over a dozen being taken from a single trunk one forenoon. I generally find this species on the light-coloured bark of the birch. Several Cidaria truncata, Entephria caesiata, Mesoleuca ocellata, Lygris populata (dark), Metrocampa margaritaria, Boarmia repandata, Coremia designata, Eupithecia nanata, and E. goossensiata (minutata) were also captured in this locality. Crambus margaritellus was common in Glen Cloy, where also a few C. inquinatellus were taken; the latter along with C. selasellus, which I found in fair numbers, but very local, on the grass behind the shore, is new to Clydesdale. C. culmellus was flying on the moor in countless thousands, and U. tristellus was just making its appearance. Scoparia frequentella was taken from tree-trunks, and a few S. murana were boxed from the walls on the shore road. A single Bryophila perla (a very scarce insect in Clydesdale) was taken from a rock far up Glen Cloy. Several Acidalia fumata, Tortrix viburnana, Salebria fusca, and Nemotois minimellus were also obtained there. Collecting in the evenings resulted in several Plusia pulchrina, P. iota, Abrostola tripartita, Triphaena pronuba, Noctua primulae (festiva), Apamea gemina, Xylophasia monoglypha (dark), Noctua umbrosa, Perizoma alchemillata, P. affinitata, Eupithecia subfulvata, Pionea olivalis, and P. prunalis being captured.

August 1st saw me again at Whistlefield. Erebia aethiops was out in abundance, but I only obtained 3s. Working up the bed of a burn, I took Amoebe olivata in fair quantity, but the capture of the afternoon was two fine Perizona taeniata, another species new to Clydesdale. Malenydris didyma was very common, as also Hydriomena furcata.

My holidays were spent at Glen Sluain near Strachur, Loch Fyne from August 19th to the 25th, and collecting was almost entirely confined to the evenings with the net only. Several Charaeas graminis, Hydroecia nictitans, Triphaena ianthina, T. comes, Noctua xanthographa,

and a single Bombycia riminalis were taken from the ragwort, where also Apamea secalis (oculea) and Caradrina quadripunctata were common. Amoebe olivata was abundant in the glens but in very poor condition, Lygris testata, was common on the moors, and two or three Coremia designata of a very small form were taken, but the insect of the locality at this time of the year is certainly Cidaria immanata, which occurred all over the district and exhibited an almost endless range of variation. Polia chi was taken from the walls, Peronea caledoniana and P. aspersana were common, Scoparia cembrae, Pionea lutealis, Arggresthia semitestacella and a single Pionea ferrugalis, and a few Crambus pinellus were taken.

September 5th. I had an afternoon at Irvine. A single Aglais urticae was found on a thistle. Thera obeliscata (variata) was disturbed in some numbers from the pines in fine condition and very variable. Several Depressaria nerrosa and Peronea schalleriana were taken. On September 8th Peronea variegana and single Tortrix unifasciana and Ochsenheimeria bisontella were boxed from a fence in Pollokshields. On the 12th I tried to obtain a few Phibalapteryx lapidata on the Lanarkshire Hills, but rain coming on just at the time of flight, I was forced to abandon my search and make for the station. Only a single specimen was obtained, along with a few Tapinostola fulra and Celaena haworthii.

October 3rd. Thera obeliscata (rariata) was still to be taken in good condition at Johnstone. On the 24th, an afternoon at Whistlefield produced Operabia dilutata in some numbers. Several Cerostoma radiatella and a single Cidaria siderata were shaken from foliage, and a single Veronea mixtana was netted on the hillside.

November 7th. A fine afternoon at Milngavie, where over a dozen Chaematobia boreata were taken, Cerostoma radiatella and Peroneu ferrugana were common, and two dark $\mathfrak P$ s of Oporabia dilutata were obtained from oak. And on the 21st, though it was a frosty afternoon, C. boreata and C. radiatella could still be taken there.

New Myrmecophilous Aphides.

By FRED. V. THEOBALD, M.A., F.E.S.

The following are descriptions of some new species of Aphidae found in ants' nests. With the exception of two (Aphis leontodoniella and a Macrosiphum) they were collected by Mr. Donisthope, and found amongst the large number of Myrmecophilous plant-lice that he has sent me. This collection also included several unknown stages of some previously described species and enabled me to trace the complete life-cycle of some, notably of Anoecia corni, Fabricius, which is a serious pest to wheat and other cereals, as well as grass, in parts of Europe, and which seems to be one of the commonest Myrmecophilous species, the ants appearing to look after the oviparous females and the eggs just as they do those of Aphis maidisradicis, Forbes, in America.

TRAMA DONISTHORPEI, nov. sp.

Apterous viviparous female. Head, thorax, antennæ, and legs dark; abdomen

paler with dark lateral spots and dusky cross-bars, broken posteriorly by a median pale line. Antenne of six segments, the two first segments nearly equal in length, but the basal one wider, the third the longest, about as long as the fourth and fifth, the fourth shorter than the fifth, fifth and sixth equal; the third has twelve sensoria on the apical two-thirds, the fourth five to six sensoria, the fifth three and a large sub-apical one, the sixth three basally, then a group of three small ones, and then two close to the large one beneath the "nail," which has one small one; hairs long as in troglodytes, "nail" longer than in the latter. Eyes large, black. Body hairy. Head hairy with a marked median suture. Segments of the thorax markedly distinct, especially the pronotum. Cauda short, rounded, with rather long hairs. Cornicles slightly elevated, with large circular openings. Proboscis long, reaching well beyond the third coxie, apex dark. The hind tarsus much more than half the length of the hind tibia; both are very hairy, but the hairs are scantier on the tibia; posterior trochanters large. A distinct stemma above each eye, the latter with a distinct ocellar process.

Length. 3mm.

Locality. Blackgang Chine, Isle of Wight, 26 viii. 1913 (Donisthorpe).

Observations. Found in an ant's nest (Tetramorium caespitum).

I think that this insect must be placed in *Trama*. It differs from *T. troglodytes*, first in general colour, secondly in the marked antenne, and thirdly in the hind tarsus. The marked ocellar process below the eyes is very characteristic. It may be pointed out here that I have always found a minute basal segment to the long hind tarsus in *troglodytes* as well as in this species.

FORDA HEXAGONA, nov. sp.

Apterous viviparous femule. Globular in form, somewhat flattened behind. Head flat and broad, slightly rounded at the sides; the integument prominently marked with hexagonal sculpturing, which also passes on to the pronotum, a few short curved hairs in front. Antennæ of five segments, rather more than \(\frac{1}{3} \) the length of body: basal segment much broader and a little shorter than the second, which is cylindrical; third segment the longest, about as long as the fourth and fifth together; fourth swollen towards the apex where there is a single sensorium; fifth a little longer than the fourth, with a prominent blunt nail, one large and four small sensoria at its base; the third to fifth segments with a few markedly capitate hairs, only slightly so on the two basal segments. Eyes small but prominent, black. Rostrum reaching to the base of the third pair of legs. Legs and antennæ appear darker than the body, the legs with scanty hairs. Cauda very dark, with numerous short, pale hairs.

Length, 1.5mm.; breadth 1mm.

Locality. Whitsand Bay, Cornwall, iv. 1909 (Donisthorpe).

Observations. I have only seen one specimen found in the nest of Formica fusca. It had been preserved in alcohol so I cannot give its colour. The marked hexagonal sculpturing separates it from the other species of Forda.

Forda furcata, nov. sp.

Apterous viviparous female. Pearly to creamy-white; domed; segments marked; legs pallid, tarsi dusky. Antennæ pallid, but darkened at the tips; rostrum pale, brown on the last segment, broad, reaching past the second pair of legs; vertex broad, slightly rounded. Antennæ moderately long, of five segments; the first two small, about equal in size; the third the longest, as long as fourth and fifth together, showing a slight constriction near the apex; the fourth slightly longer than the second, the fifth nearly twice as long as the fourth, all the segments with rather long simple hairs; the fourth with a single sub-apical sensorium, the fifth with one large and several small sensoria just below the short "nail." Eyes very small, reddish, represented by 3 ocelli. Legs rather short, with dark tarsi, with numerous rather stiff hairs on all the segments. Hairs on the head both

simple and furcate; on the body some are more broadly expanded apically, others slightly capitate; cauda pale, rounded, with four long pale hairs and some median shorter ones, notched at the sides, and from each notch arises a long hair.

Length. 1.5mm. to 2mm.

Locality. Sandown, Isle of Wight, 24 viii. 1908 (Donisthorpe).

Notes. Described from two $\mathfrak S$ s taken in the nest of Myrmica laerinodis. It can at once be told by the form of the hairs. The antennal structure certainly places it in Forda, and approaches that of F. viridana, Buckton. The siphon openings are quite level with the body.

APHIS ALIENUS, nov. sp.

Apterous viviparous female. Bright emerald green. Eyes large, dark. Antennæ shorter than the body, of six segments, the fifth dusky at the apex and all the sixth; first segment broader and slightly longer than the second; the third longer and narrower than the second; but often not quite as long as the fifth; the fourth about one-third the length of the third, and about equal to the length of the first two; fifth slightly longer than the third, up to the long "nail," about as long as the fourth; the first and second slightly darker than the third and base of the fourth; the fourth and fifth markedly imbricated, the third on the apical half only; edges serrated, a few scattered hairs on all the segments. Proboscis dark at base and apex, reaching to the third coxa. Prothoracic ring with blunt lateral processes. Abdomen with one lateral blunt papilla on each side, between the second and third pairs of legs and another between the cornicles and cauda. Cornicles rather short, black, thick, expanded basally, marked with dotted lines instead of true imbrication, about as long as the cauda, which is dusky especially at the apex. Legs moderately long, especially the hind pair, the tarsi and apices of the tibiæ dusky; femora with a few hairs; tibiæ with many; last tarsal with serrated edges and markedly Imbricated. A large, marked papilla on each side of the cauda, between it and the cornicles. Penultimate segment of the rostrum swollen.

Length. 1mm. to 1.3mm.

Locality. Seaton, South Devon, 2 viii. 1912 (Donisthorpe); Whitsand Bay, Cornwall.

Observations. Found in the nests of Lasius alienus.

It is one of the smallest Aphides I have seen. It approaches Walker's Aphis subterranea, but can at once by told by having antennæ composed of five, not six, segments in the apterous female; the cornicles are also relatively longer and of different shape being much expanded basally, they are also black whilst in subterranea, they are only black at the tips. The antennæ and legs are also thinner than in Walker's species. Nor is it Koch's Aphis carrotae, which Buckton and others take to be subterranea, for Koch's species has a dark head and dark cauda and also antennæ of six segments and shorter cornicles. I have not found alate of Aphis carrotae, but judging from the apteræ it is distinct from subterranea and the one I describe here.

Aphis Leontodoniella, nov. sp.

Apterous viviparous female. Very pale yellowish-green all over. Eyes large, deep black, edged with red. Head with a depression on each side, raised in the centre, with numerous longish pale hairs. Antennæ pallid, thin, half the length of the body, of six segments, the basal one large and broad, the second narrower and slightly shorter, the third long, but not as long as the sixth; the fourth rather more than half the length of the third, the fifth slightly shorter to nearly as long as the fourth, longer than the basal part of the sixth, which has a very long thin "nail"; all segments with prominent long thin pale hairs; a sensorium near apex of fifth and some faint ones at the base of the "nail," which is markedly striate and serrated at the edges. A distinct large rounded process on each side of the pronotum and five smaller ones on each side of the abdomen, which has very small,

blunt spine-like processes all around and some longer hairs. Cauda pale, rounded, with minute, dense, blunt spines and longer hairs. Anal plate rounded and similarly adorned. Cornicles very pale, moderately long, showing faint imbrication and fine serrated edges. Legs, including the ungues, very pale, hairy, with the apex of the tibiæ projecting on one side in a short, sharp process. Proboscis pallid, reaching beyond the third coxe.

Length. 1.8mm.

The *nymph* is very similar but the cornicles are slightly longer; the wing pads are pallid and semitransparent.

Locality. Wye, 27 x. 1911 (Theobald).

Observations. Found in the nest of Lasins flavns and also feeding on dandelion roots. I found many aptere in both situations, but when I searched for them some ten days later, none could be found; as the nymphs were appearing on the 27th, probably they had all become winged and fled. It is possibly the ground form of some other described species, but I have named it provisionally. The ants were watched "milking" the females whilst they were sucking the sap from the dandelion roots.

Macrosiphum formicarium, nov. sp.

Alate viviparous female. Head dark brown. Antennæ much longer than the body; basal segment brown, much longer than the second, which is pale, rest of antenna dark brown, except just the base of the third; third segment a little longer than fourth, with about 20 sensoria over about two-thirds of its length; fourth segment longer than fifth, which has a large sub-apical sensorium; hairs scanty, rather long and stiff. Eyes black. Proboscis pale, black at the apex, reaching to the second coxæ. Thorax dark. Abdomen pale with dark lateral spots from which arise longish hairs from distinct tubercles; over the rest of the abdomen also arise straight stiff hairs from pale tubercles. Cornicles very long, cylindrical, slightly swollen at the base, dark, except just at the base, reticulate for the greater part of their length, markedly imbricated near the base, which is unadorned. Cauda large, bluntly lanceolate, pale with three large pale hairs on each side and two median sub-apical ones. Legs moderately long, pale yellowishgreen with dark areas at the apices of the femora and tibiæ and dark tarsi; rather long, stiff hairs on the femora and tibiæ. Wings ample, with brown veins, pale brown stigma and pale insertions.

Length, 2.3mm; wing expanse, 7mm.

Locality. Lundy Island, 9 vi. 1913 (Donisthorpe).

Observations. Described from a single specimen taken by Mr. Donisthorpe in a nest of Lasius flavus. The cornicles are very long, and peculiar in that they are reticulate over nearly their whole length; the stiff hairs on the body are also characteristic. As the specimen had been for some time in spirit, it is not possible to give the actual coloration. Koch describes an underground Macrosiphum as Siphonophora subterranea, but this species has shorter cornicles and a black cauda.

I have received two other species of Macrosiphum from ants nests, but both too damaged to describe. One was an apterous female of a uniform pale colour, with black eyes; long, thin, straight, imbricated pale cornicles; cauda long, uniform and pale. Tarsi dusky. Length, 2.3mm. Taken by Donisthorpe in a nest of Lasius niger at Rossbeigh, Co. Kerry, in June, 1902.

The other was sent to me by Mr. Britten, taken "in ants' nest at

Great Salkeld, Penrith."

I think these are the only records of this genus being found in ants' nests.

A Reply to the Rev. C. R. N. Burrows, F.E.S.

By G. T. BETHUNE-BAKER, F.L.S., F.E.S.

I am unfeignedly sorry that my friend and brother editor should think that I have called in question his honesty, or Mr. Pierce's either, I can quite truly assure both that no such motive ever entered my thoughts. The latter gentleman attacked my method of work and my method of illustration, and if I carried my defence into the opposing camp I do not think there is just cause for complaint, but in so doing I certainly have impugned no one's honesty of purpose.

"What the master's eye can see" is Mr. Pierce's own expression—

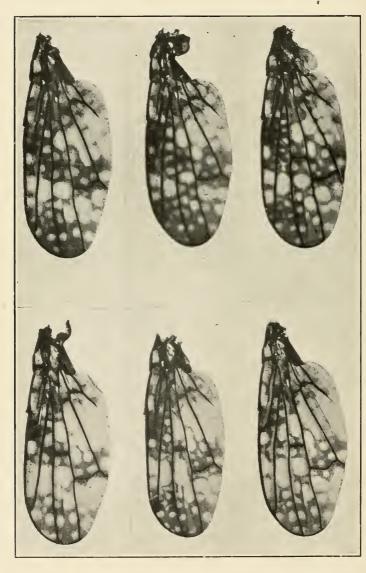
the full sentence reads thus:-

"The latter (a drawing) reveals to the student what the master's eye can see, and whilst obscuring and unimportant parts can be omitted, it is possible to present with clearness every feature and organ that is of characteristic and distinctive value."

That sentence is quite conclusive justification for my conclusions as regards this particular point. There are one or two things that Mr. Burrows refers to that I had better further elaborate, and explain. He evidently thinks that I prepare my "mounts" quite flat in the profile position, though I should have thought that every one, who looked over my papers and read my arguments, would have understood that such was not the case; all my preparations are mounted in as deep cells as possible, with the cover glass laid over them so as only just to keep them in position. In this method the natural position is accurately maintained, and it is possible to examine the whole cavity within, and as I stated at first the correlation of all the parts is before the observer. I have been fortunate enough to get some specimens mounted thus "in coitû," in cases where I have been able to kill them suddenly before separation, and so have been able to compare the actual position in use with the position at rest—the two positions are natural as in life. To obtain the natural vertical position would involve the genitalia, being mounted edgeways in such deep cells, that generally speaking the venter would be out of focus when examining the dorsum, and in addition to this it would be impossible to mount the majority of insects thus without using considerable pressure and thus distorting the organs. Mr. Burrows will no doubt bear in mind in the future that I never do and never have used any pressure to my profiles, and that therefore they are truly in their natural positions as at rest. He must, I think admit that the flat spread position, which I say is distorted, can never be assumed in nature.

Mr. Burrows says I accept the authority of Dr. McDunnough. I nowhere said so, and in one special point I expressly disagreed with him. I quoted him as being accepted by Mr. Pierce, and then went on to show that he accepted him where it was convenient and ignored him in other cases. With these exceptions my previous article covers, I think, all the material points raised by my brother editor, and in closing I will only say one word which is to express again my sincere regret that he should think for a moment that I called in question either his or Mr. Pierce's honesty of purpose, on the contrary, I rather pointed out the latter's thorough openness in showing us so plainly by his drawings how his opinions were materialising.





WING-MARKINGS OF TEPHRITIS FLAVIPENNIS, LW.

Photo. J. E. Collin.

The Entomologist's Record.

Variation in the wing-markings of Tephritis (Oxyna) flavipennis, Lw. (With plate.)

By J. E. COLLIN, F.Z.S., F.E.S.

The Dipterous family Trypetidae, to which the above species belongs, is composed of Acalyptrate Muscids with, in the majority of cases, prettily mottled or banded wings; the shape and disposition of these wing-markings constituting specific, and to a certain extent, generic Many of the species live in the larval stages in the flowerheads, or stems, or in galls on the stems or roots of Compositae; others live in the seeds, or fruit, or mine the leaves, of various plants. The imagines in many cases are never found far away from their food-plant, and are often sporadic in their appearance, so that a species which for many years may have been considered a great rarity suddenly turns up in considerable numbers; this has been the case so far as my experience goes with the species under discussion, T. flaripennis; over forty years collecting by the late Mr. Verrall produced only two specimens, but in June and July, 1904 and 1911, Mr. C. G. Lamb of Cambridge found the species in a very limited area in the parish of St. Merryn (Cornwall) and could have taken any number of specimens; he called my attention to the great variation displayed in the wing-markings of his long series, and very kindly placed the specimens unreservedly at my disposal for purposes of study. Owing to the great use made of characters in the wing-markings for distinguishing species, the publication of a few photographs taken by my friend Mr. Hugh Main, showing, to a certain extent, the amount of variation in Mr. Lamb's specimens, may not be without scientific interest.

T. flavipennis, Lw., so closely resembles two other British species, parietina, Lw., and proboscidea, Lw., that Loew in his monumental work Die Europäischen Bohrfliegen (1862) expressed a doubt as to whether they were not really all varieties of one species; he, however, overlooked the important character of an extra pair of dorso-central bristles on the thorax of flavipennis, making three pairs in all, while parietina and proboscidea have only two pairs of such bristles. The larva of T. flavipennis lives in galls on the root-stock of Achillea mille-

folium.

T. parietina, L., has rather smaller eyes and consequently larger cheeks than flavipennis, and the proportion of depth to length of head is more equal, while the proboscis is not quite so long. On the wings the crossveins are rather closer, and the triangle of hyaline spots having its base on the costa is not so directly over the crossvein closing the discal cell, but slightly beyond it. I have not yet seen a British specimen, but as the larve live in the stems of Artemisia vulgaris, a common British plant,; the record as British is probably correct.

1. proboscidea, Lw., has more the wings of parietina and the head of flavipennis, but in addition to the one pair of black incurved lower fronto-orbital bristles, there are 1-2 pairs of quite small, whitish, incurved bristles that are absent in the other two species; moreover proboscidea normally has only two pairs of scutellar bristles, while the other two species normally have four. The larvae live singly in galls

on the root-stock of Chrysanthemum lencanthemum.

The Plate is self-explanatory, the top left hand figure showing a specimen with the pale markings abnormally extensive, those below this and on the right showing a gradual restriction of these pale

markings. Loew figured a still darker form in his photograph of a female wing on Plate xvi. of his work quoted above.

Gynandromorphs and Sex.

By Hy. J. TURNER, F.E.S.

In the Entomologist's Record, vol. xxiii., page 215, was a Current Note on "Gynandromorphous Macro-Lepidoptera," giving a list of references to a series of articles in which were catalogued all the gynandromorphous specimens known, with details of their individual characteristics.

We have recently gone through the first four series of these records with a view to test the value of a general statement which has been made sometimes, viz., that as a rule the right side was male and the left side female.

The references are all to species of the Rhopalocera of the Palæarctic Fauna. Those gynandromorphous examples whose sexes were mixed, and indefinite as to sex division, have been omitted.

[Illustrierte Wochenschrift für Entomologie, vol. i., 1896; vol. ii., 1897; vol. iii., 1898; and Berliner Entomologische Zeitschrift, vol. xlix., 1904.]

Papilio machaon, right side 3 = 3, left side 3 = 1. Parnassius apollo, right side 3 = 2, left side 3 = 1. Parnassius delius, right side 3 = 6, left side 3 = 3. Pieris brassicae, right side 3 = 1, left side 3 = 2. Pieris napi, right side z = 2, left side z = 5. Pontia daplidice, right side 3 = 4, left side 3 = 3. Enchloë cardamines, right side 3 = 7, left side 3 = 11. Euchloë damone, right side z=1, left side z=0. Leptosia sinapis, right side 3 = 0, left side 3 = 1. Zegris enpheme, right side $\beta = 0$, left side $\beta = 1$. Colias chrysotheme, right side $\mathfrak{F}=1$, left side $\mathfrak{F}=0$. Colias erate, right side 3 = 1, left side 3 = 0. Colius hyale right, side 3 = 3, left side 3 = 0. Colias edusa, right side 3 = 3, left side 3 = 5. Colias palaeno, right side 3 = 1, left side 3 = 2. Colias myrmidone, right side $\mathcal{F} = 0$, left side $\mathcal{F} = 1$. Goneptery.v rhamni, right side 3 = 18, left side 3 = 16. Gonepteryx cleapatra, right side $\mathcal{F} = 12$, left side $\mathcal{F} = 9$. Buthys quercus, right side 3 = 1, left side 3 = 0. Ruralis betulae, right side $\beta = 1$, left side $\beta = 0$. Rumicia phlaeas, right side $\beta = 0$, left side $\beta = 1$. Heodes virganreae, left side z=3, left side z=0. Chrysophanus hippothoë, right side $\mathfrak{F}=0$, left side $\mathfrak{F}=1$. Loweia alciphron, right side $\mathcal{F} = 0$, left side $\mathcal{F} = 1$. Loweia amphidamas, right side $\mathcal{J} = 6$, left side $\mathcal{J} = 2$. Lycaena arion, right side $\mathcal{J} = 1$, left side $\mathcal{J} = 0$. Lycaena euphemus right side $\beta = 0$, left side $\beta = 1$. Agriades thetis, right side 3 = 3, left side 3 = 2. Agriades voridon, right side z = 2, left side z = 0. Plebeius argus (aegon), right side $\mathcal{J} = 1$, left side $\mathcal{J} = 4$. Plebeius argyrognomon, right side 3 = 3, left side 3 = 0. Celastrina argiolus, right side $\beta = 0$, left side $\beta = 1$. Polyommatus icarus, right side $\mathcal{Z} = 12$, left side $\mathcal{Z} = 9$. Polyommatus hylas, right side 3 = 1, left side 3 = 1. Polyommatus meleager, right side $\mathcal{F} = 1$, left side $\mathcal{F} = 2$. Polyommatus escheri, right side $\mathcal{J} = 1$, left side $\mathcal{J} = 0$. Polyommatus amandus, right side $\mathcal{Z} = 1$, left side $\mathcal{Z} = 2$. Aricia enmedon, right side $\mathcal{J} = 1$, left side $\mathcal{J} = 0$. Hirsntina damon, right side $\mathcal{F} = 0$, left side $\mathcal{F} = 1$. Hamearis lucina, right side $\beta = 1$, left side $\beta = 1$. Araschnia levana, right side $\mathfrak{F} = 1$, left side $\mathfrak{F} = 1$. Dryas paphia, right side $\beta = 18$, left side $\beta = 20$. Dryas pandora, right side $\beta = 1$, left side $\beta = 0$. Pyrameis cardui, right side $\mathcal{J} = 0$, left side $\mathcal{J} = 1$. Pyrameis atalanta, right side $\mathcal{J} = 1$, left side $\mathcal{J} = 1$. Engonia polychloros, right side $\beta = 0$, left side $\beta = 1$. Envanessa antiopa, right side 3 = 6, left side 3 = 4. Aglais urticae, right side $\mathcal{J} = 0$, left side $\mathcal{J} = 1$. Brenthis selene, right side $\mathcal{F} = 0$, left side $\mathcal{F} = 1$. Melitaea didyma, right side $\mathcal{F} = 1$, left side $\mathcal{F} = 0$. Melitaea phoebe, right side $\mathcal{J} = 1$, left side $\mathcal{J} = 0$. Melitaea athalia, right side 3 = 1, left side 3 = 0. Melitaea dictynna, right side $\mathfrak{Z} = 0$, left side $\mathfrak{Z} = 1$. Limenitis populi, right side 3 = 9, left side 3 = 6. Apatura iris, right side $\beta = 1$, left side $\beta = 1$. Apatura ilia, right side $\beta = 2$, left side $\beta = 5$. Epinephele lycaon, right side 3 = 0, left side 3 = 2. Epinephele jurtina, right side $\beta = 7$, left side $\beta = 0$. Erebia aethiops, right side z = 1, left side z = 1. Erebia euryale, right side $\beta = 0$, left side $\beta = 2$. Hipparchia semele, right side z = 1, left side z = 0. Pararge maera, right side $\mathcal{F} = 0$, left side $\mathcal{F} = 2$. Hipparchia statilinus, right side $\mathcal{J} = 0$, left side $\mathcal{J} = 1$. Satyrus hermione, right side $\mathcal{S} = 0$, left side $\mathcal{S} = 2$. Satyrus alcyone, right side 3 = 1, left side 3 = 0. Coenonympha arcania, right side $\mathcal{F} = 0$, left side $\mathcal{F} = 2$. Adopaea flava, right side $\beta = 1$, left side $\beta = 0$.

Summing up these we find that out of 302 examples of recorded gynandromorphic specimens of European Rhopalocera, we have 157 cases in which the 3 secondary sexual characters predominate on the right side, and 145 cases in which they predominate on the left side, that is, approximately the same numbers, so that these figures give no support to the statement that in gynandromorphic specimens the right side of the insect is usually predominantly male. The figures for individual species give the same indication, Dryas paphia, 18 to 20; Polyonmatus icarus, 12 to 9; Gonepteryx rhamni, 18 to 16, etc.

Certain species seem very prone to the phenomenon of gynandromorphism. Both Gonepterys rhamni and G. cleopatra: Dryas paphia, but not the closely allied D. pandora: Enchloë cardamines, but not E. euphenoides, of which no specimen was recorded; Polyommatus icarus, but none of the rest of the "blues"; Limenitis populi and perhaps Apatura ilia. The remainder of the species show but very slight

tendency to this aberration.

A large number of gynandromorphs of the Heterocera are catalogued in the lists referred to, but no summary has been made. Casual inspection of odd chapters have supported the contentions (1) that no predominance exists in the side of the insect which assumes the male secondary sexual characters, and (2) that the number of each sex in a species is approximately the same.

A "Priority" Note.

By GEORGE WHEELER, M.A., F.Z.S., F.E.S.

On the last page of the December number of the Ent. Record we find the following observation: -- "As the term 'falces' was introduced so long ago as 1905, it has priority over the term 'gnathos,' which will fall" !! (The italics and notes of exclamation are mine.) I express no opinion as to the greater suitability of one term or the other, but the implication contained in this phrase that the Law of Priority has any reference whatever to the names of anatomical sections, or indeed to anything at all except classification, cannot be too soon exposed or too emphatically contradicted, especially since the same monstrous doctrine seems to be accepted, and almost taken for granted, in the subsequent papers on the same subject by Mr. Bethune-Baker and the Rev. C. R. N. Burrows. Fortunately not even the maddest of Priority fanatics has yet succeeded in reducing us to this condition of helplessness, and we are still absolutely at liberty to choose the most suitable and descriptive nomenclature in all such cases, without giving a thought to the question which was the first in use. In point of fact it is quite unlikely that the first name used will in most cases meet with general acceptance, since later nomenclature generally means further research, and the wisdom of yesterday will often be the ignorance of to-morrow. At the same time there are two principles which should (in my opinion at least) be generally recognised: first, a word used in any branch of science by one author to designate a particular object, or part of an object (e.g., "scaphium"), should not be available for use by another author to designate some other object, or some other part of the same object, in the same branch of science; and secondly, an author changing his nomenclature should be expected to draw attention to, and explain, the change, in such a way as to leave no doubt as to his meaning in the minds of his readers. A general regard for these two principles will obviate any probability of misunderstanding, without dragging the hateful Priority question into matters for which it was never intended, and where it could only become a bar to any rational progress even more effectively than it has already done in the domain of Classification.

The Butterflies of Lower Egypt.

By Colonel N. MANDERS, D.D.M.S. EGYPT, F.E.S.

I had intended to publish nothing on the above subject until I had completed my tour of service in Egypt, but tenure of appointment is so uncertain in these troublous times that I think it better to put on record the few observations I have made, and if opportunity occurs to extend them afterwards.

The most useful paper I know on Egyptian butterflies is one

published by Mr. P. P. Graves in the Entomologist's Record, 1904, and these notes may be regarded as supplementary to that paper. Mr. Graves is in Cairo at the time of writing, having had an exciting and trying time in getting out of Constantinople at the declaration of war. We hope to forget our labours for the moment in a jaunt into the desert for the few but interesting insects that occur there. Egypt is sufficiently well known to make any remarks on the country superfluous; but one scarcely realises, until one actually sees it, the extraordinary proximity of the most fertile land probably in the globe with the most sterile; the dividing line is most strongly drawn, a yard even separating the two; the cause, of course, being the fertile alluvium brought down by the annual Nile flood. This makes it difficult to say, in many cases, what are actually desert species and what not, particularly among the Hymenoptera, as, owing to their powers of flight, they spread from cultivated districts far into the desert, being attracted at certain seasons of the year by the flora that grows in the bottom of the valleys, which meander far into the hills and which debouch on to the desert plains in close proximity to the Nile's overflow. Dragonflies also are extraordinarily wandering creatures; though found usually in the neighbourhood of water, they occur miles from it in the very heart of the desert, and some butterflies whose larvæ feed on garden plants, by means I do not attempt to explain, have thrown off their usual habits and have become entirely denizens of the desert. Pontia daplidice is one of these; on the continent of Europe, so far as I have observed it, this may be regarded almost as a garden insect, but I was surprised to find that the only locality, except for an occasional stray specimen, was the desert ravines miles away from cultivation of any kind. In Egypt it is a scarce insect, and the only two specimens I have taken were a pair at Wadi Hof, on March 8th, 1914. They were flying about some dried-up grass at the bottom of the ravine, which, even at this early period of the year, was very hot, and the vegetation already becoming desiccated with the heat.

Anthocharis belia, a butterfly I have not yet met with here, is also

an entirely desert species.

The appearance of butterflies in Egypt, more especially those of the desert, is very largely dependent on the rains which usually fall in the winter months. These are very capricious, occasionally, perhaps once in fifteen or twenty years, there is such a heavy downfall, that the Wadis become raging torrents, banks and roads are washed away, and considerable damage is done to property.

On the other hand, no rain or a few drops only may fall for two or three years, and the average at Cairo is but a little more than an

inch.

Last year, 1913-1914, the rains almost entirely failed and consequently the desert plants, which are entirely dependent on them for their spring and early summer growth, scarcely flowered at all and put forth a very scanty leaf, the result being that all through the year the desert flora was by no means in evidence. Butterflies are likewise affected by the climate. In what stage the desert butterflies pass the hot dry summer months I am unable to say, it probably varies with the species, but there is little doubt that if the winter rains fail the species emerge in very diminished numbers, and it is quite possible that under these circumstances the earlier stages take more than a

single year for their completion. My first year in Egypt fell on a lean year and consequently some species such as *Anthocharis belia* and *Melitaea deserticola*, which I might reasonably have expected to meet with, failed to put in an appearance.

Many butterflies, such as Pyrameis cardni and Zizeeria lysimon, have a succession of broods throughout the year if the seasons should be favourable. In the intense heat of summer and in the cold weather

their numbers decrease or tend to disappear.

Some butterflies have a succession of broods, perhaps two or three, or a prolonged emergence in the spring from February until the end of April. Anthocharis belemia, for instance, is on the wing for almost six weeks in March-April, and then disappears until November or December when it becomes common again in its special localities. I have found no great difference in the underside in the spring and autumn broods. Pontia glauconome occurs in the same way; my dates are March 8th, April 22nd, and single specimens in December. It is strictly a desert insect, the larva feeding on Capparis speciosa.

It is with diffidence but with conviction that I record the genus Teracolus in Egypt; on April 13th in Wadi Hof near Helouan a butterfly flew past me, and which I failed to eatch, but recognized as Teracolus (Idmais) fausta from a full acquaintance with its South Indian form T. tripuncta. In the heat of the day it is an extremely fast flier, but in the early morning before the sun is well up, it can be approached fairly easily, and this applies to many tropical and subtropical butterflies. There is no reason why it should not occur in Egypt, as it is fairly common in certain parts of Syria and in all

probability in the Wadis of the Sinai peninsula.

Another butterfly I record for the first time in Egypt is Spindasis (Aphnaeus) acamas, a female specimen of which was captured in October, 1913, in the desert beyond Heliopolis, by Mr. Adair, of the Egyptian Agricultural Department. I tried for it unsuccessfully this year, and possibly it was a straggler. I took it many years ago at Suakin, during the campaign, and these were described by Mr. A. G. Butler as a new species, to which he gave the name A. bellatrix, to commemorate the circumstances under which they were taken. The type is in the British Museum. No doubt they are a geographical race of this variable insect. The specimens I took in the Punjab are very much paler.

Danais chrysippus is a common insect and of the dark African type; I was shown by Dr. Gough, of the Agricultural Department, a specimen of the form alcippus, the first, I believe, recorded in Lower Egypt. I am told that this form is not uncommon in the Fayum, where I have had no opportunity of collecting. This form has not

been recorded south of Assouan.

Colias edusa flies in March, April and May, when towards the end of the month it disappears till autumn, then it gradually increases in numbers till the spring, when it is at its maximum. A lucerne field in April reminds one very much of an August day in England in an edusa year. The fields are alive with this striking insect and with Pieris rapae and Pyrameis cardui. The helice form of the female, or rather that named pallida by Tutt, is not uncommon, and I thought I had caught a record with the measurement of 62mm., until shortly after I read that Mr. Frohawk had bred one in England measuring 67mm.

My largest edusa female is 57mm. Among the Lycaenidae I may refer to Plebeins (Lycaena) loewii as being one of the most interesting. The male is of a most brilliant hue, reminding one of hylas. is dimorphic. In other countries than Egypt it is brown with white spots; in Egypt this form is very exceptional and I only know of one specimen. The usual form might be described as of a bright blue, rather duller than the male, but perhaps more correctly as brown covered almost completely with blue scales; the brown is almost confined to an ill-defined suffusion extending from the cell to the costa of the forewing, giving the insect an almost smudged appearance even in perfect specimens. It bears the same relation to the brown form as the blue form of the female icarus usual in Ireland does to the normal form in England. It is very local and only found near the foodplant, around which it flutters. The males are somewhat pugnacious, and are rather difficult to obtain in good condition. The only locality I know of near Cairo is the Mokattam Hills, where it is not uncommon in April in a space about a quarter of a mile long and about a hundred yards broad; it might therefore be easily exterminated.

A few other specimens have been noted in other parts of the Arabian desert. The foodplant is Astrayalus förskalei, and in the female's method of oviposition we have a remarkable instance of how an instinct devoted to one purpose evidently assists the preservation of

the species in another way.

After apparently aimless fluttering round a bush, she finally settles on one of the larger branches and walks down it into the centre of the plant, and selecting a leaf-bud which is quite low down and scarcely visible, deposits her egg close by its side. In what stage the hot weather is passed I am unable to say definitely, but the advantage of laying her eggs low down in the centre of the bush is threefold. The young leaves which bud in the late winter or spring, first start from the lower stems; by placing them in a sheltered position they are protected from the fierce hot winds which blow with great persistence throughout the summer; and thirdly, and quite inadvertently, they are protected from the camels, which in spite of the formidable thorns browse down the plant almost to the ground when the scanty forage in the desert becomes still further reduced by the summer heats.

It may be of interest to note that when finding a place in which to oviposit the female rotates the hindwings in the manner so noticeable in many species of the males of the *Lycaenidae* when at rest after a flight, and which has been presumed to be, and probably is, a stridulating process. Excitement is no doubt the stimulus in this case.

Virachola livia is one of those interesting butterflies in which the sexes are differently coloured; in this case the male is a bright copper and the female brown with a bluish suffusion. I have seen no trace of red in any of the numerous females I have examined, and infer that the brighter colour of the male is a later development. In coloration and habits it recalls very vividly to my mind Zezius chrysomallus, so frequent in old days in the neighbourhood of Colombo. The males fly vigorously round flowering shrubs in the full sunshine and the females are rather more secluded in their habits, but they do not, in any way, seek concealment, and the brighter colour of the male is probably an indication of greater and more active vigour. The larva feeds, as do other species of the genus, in the interior of pomegranates,

and does considerable damage to the crop in Egypt, and is indeed classed as a noxious insect. In other countries it is usually considered a somewhat scarce butterfly.

A butterfly very rarely taken in Egypt is Hesperia (Pyryns) evanida, Butler. I have already made mention of this in the Entomologist's Monthly Magazine of last year but cannot give the reference and have mislaid the notes I sent on the subject. [Vol. L. (xxv.), p. 174.—H.J.T.]

I may say here that it is an entirely desert insect, and is, so far as I have observed, single-brooded in April. It is extremely difficult to catch as it has a rapid zigzag flight close to the ground, and is almost impossible to see in the flare of the desert. It settles with closed wings always on the ground and is very hard to make out amongst the rocks and sandy soil it always frequents. I have never found it far away from Convolvulus lanatus which I have no doubt is the foodplant. I may mention the curious fact that this plant has two sets of leaves, those grown in the spring being long, and those in early summer narrow and short.

Note.—Bingham's description of the male of *Plebeius loweii*, *Butterflies in India*, vol. 2, p. 343, probably taken from Beluchistan specimens, is decidedly different from Egyptian specimens; how far either agree with Zeller's original description I am for the time being unable to say.—N. M.

Nore.—Bingham, Butt. Ind., vol. ii., p. 343 (1907), Lycaena

loewii, Zell.

3 Upperside.—A beautiful purplish-blue, changing in certain lights to deep blue; veins of both fore- and hindwings jet-black, outwardly very conspicuous.

Forewing: Costa very slenderly, termen from apex to tornus much

more broadly and evenly, black.

Hindwing: Costa broadly, termen a little more narrowly and dorsum broadly dusky black; posteriorly the blue ground-colour between the conspicuous black veins terminates in each interspace in an intense black spot, that contrasts strongly with the duller black on the terminal margin; cutwardly these black spots are separated from an anteciliary intense black line by a slender edging of bluish-white scales. Cilia of both fore- and hindwings white, with their basal halves dusky black.

3 Underside.—Brownish-grey.

Forewing: A prominent discocellular, transverse, white encircled black spot; a transverse discal row of six comparatively black spots, edged very slenderly on the inner side, very broadly on the outer side with snow-white, the anterior five spots of the row placed in a slight curve, the upper four round, the lower spot larger, oval and obliquely placed; the lowest posterior spot of the row also large, elongate, sometimes composed of two geminate spots placed vertically under and out of line of the curve formed by the anterior five; these are followed by a broad, transverse, post-discal blackish-brown band, a terminal, catenulated transverse white band, each link of which is centered with a dusky black spot and an anteciliary, very prominent, somewhat lunular black line.

Hindwing: A transverse subbasal series of four black spots, a transverse discocellular spot and a discal series of six similar spots,

the anterior five of which are placed in a semicircular curve, vertically below which the posterior spot, which is sometimes double and geminate, is posited out of line of the curve formed by the anterior five. All these spots encircled with white, which on the outer side of the discal series of spots entirely replaces the ground-colour up to the terminal margin. On the white area are superposed a transverse, post-discal, highly curved series of connected black lunules, a subterminal series of black spots, one in each interspace, and an anticiliary slender black line; the posterior two spots of the subterminal row are inwardly edged with bright ochraceous and sprinkled with metallic blue scales.

Antennæ black, the club touched with white apically and the shaft ringed with the same colour; head, thorax, and abdomen black, with a little blue pubescence; beneath, the palpi, thorax and abdomen

white.

Var. chamanica, Moore, J.A.S.B. (1884), p. 23.

The 3 is slightly paler blue on the upperside, on the underside the markings, though small, are precisely as in L. loweia."—H.J.T.

Note.—Zeller "List of the Lepidoptera collected by Prof. Dr.

Loew in Turkey and Asia," Isis, 1847, p. 9.

Lycaena loweii, n.sp. (Zell.).—Alis supra 3 laetissime azureis, 9 fuscis, maculis posteriorum tribus aurantiaco marginatis; subtus griseis punctis ocellaribus distinctis, fascia posteriorum marginali dimidia aurantiaca, maculis duabus nigris coeruleo argentatis.

Zeller, in his notes, says, "The uppersides of the wings of the male have a deeper and more brilliant blue than has L. adonis; the margin is very narrow black; the black scaling on the veins does not extend far from the margin; on the hindwings there are traces of blackish spots between the veins along the hind margin. Fringes brownish, at the apex of the forewings whitish.

The undersides of the males powdered light gray."—H.J.T.

Addendum to Mr. A. J. Fison's Note on Loweia (Chrysophanus) amphidamas, Frey.

By LILIAN M. FISON.

Loweia (Chrysophanus) amphidamas has apparently become scarce at Caux latterly. A visit to and beyond Caux on May 31st, 1913, resulted in nothing, and two more in early June, 1914, proved equally fruitless. I hope other collectors may have been more successful in their quest

of this pretty butterfly.

One may say, in fact, that an outstanding feature of my two seasons' collecting—1913 and 1914—in several parts of Switzerland and Savoy—at least, as far as my experience goes—was the remarkable scarcity of "Coppers." Indeed, the only time I found any Chrysophanidae in anything approaching profusion was in the valley of the Arve at Chamonix, June 12th-21st, 1913, where Heodes (Chrysophanus) virganreae was swarming with Chrysophanus hippothoë, chiefly over fields of rye, the $\mathfrak P$ seasily out-numbering the $\mathfrak P$ s. Both races were large, and, being quite fresh, one was able to secure a nice series.

At Grindelwald, July 22nd-August 7th, 1914, these species were only very fairly common, even on the (sunny) slopes of the Faulhorn, behind Grindelwald, where Agriades covidon, Hirsutina damon, Polyom-

matus pheretes, Brenthis pales, B. euphrosyne, B. selene, B. amathusia, Melitaea cynthia, M. matura var. wolfensbergeri, Pontia callidice, Coenonympha arcania var. darwiniana, C. satyrion, Aglais articae, Pieris rapae, with various forms of Erebia, many of which, alas! still need identification, owing to necessity decreeing they must be left behind in Switzerland, swarmed always on higher rhododendron covered slopes right up to the summit, some 8,000ft.—and in fields equally beloved of butterflies around the Upper and Lower Glaciers, and in the valley of the Lütschine.

Loevia (Chrysophanus) dorilis & I found once in fields between Baugy and Vevey La Tour, August 18th, 1914; although there were a few 2 s at Charpigny during both seasons.

Loweia (Chrysophanus) alciphron var. gordius was never really plentiful, even at Vernayaz or around La Batiaz; and Rumicia phlaeas I saw not at all! male nor female.

The seasons were, however, wet and sunless, except, perhaps, mid-June and part of August, 1914; as, I believe, was the preceding one, 1912.

One feels inclined to think that want of sun tends to produce scarcity to a more marked degree in particularly bright-coloured races, such as Chrysophanus, than in darker ones, such as the genus Erebia, species of which were numerous in some places, viz., aethiops and melampus from Villars-Bretaye, and at Grindelwald, July, 1914; oeme and manto (not so common) above Upper Grindelwald Glacier; tyndarus, lappona (with ab. pollux), gorge, and stygne on Faulhorn, August 1st, 1914; medusa and var. hippomedusa between Bex and Charpigny, May-June, 1913-14; oeme on Dent du Midi with ceto, ligea, and higher, euryale, July, 1914; ceto (perhaps not very abundant) at Zermatt, June, 1914, etc.; Satyrus hermione swarming with S. cordula all June and July, both years, at Charpigny, and in vineyards above Martigny; most forms of the genus Pararge (Charpigny, Lac Champex, Grindelwald, etc.); Coenonympha, most forms at several places, including the rarer tiphon, W. of St. Triphon Marsh, etc., and in lighter-coloured races as the genus Pieris, usual forms of which were plentiful everywhere, except daplidice, Anthocharis belia var. simplonia, smaller race than some, but not quite alpine, nearly profuse at Zermatt in early June, 1914; and var. flavidior fairly common along the banks of the Gryonne (near Bex), 1914—odd specimens spreading to the Charpigny rock, May, 1913, and Parnassius apollo, at many places most abundant (Finhaut, Champéry, Grindelwald, etc.), although neither delins nor mnemosyne came under my notice.

This opinion is strengthened from the fact that on my return to England, at the end of August, 1914, Rumicia phlaeas was swarming to mid-September on the Surrey Downs between Guildford and Newlands Corner, the summer having been an exceptionally dry one! Of course, Rumicia phlaeas is admittedly a commoner species in England than in Switzerland. It must, therefore, be with reservation that one argues—although one does argue it—that the theory of the sun tending to produce brilliant forms, and lack of it only dark, or lighter ones, holds good in this case. Especially, when, on the other hand, such highly-coloured butterflies as certain species of Lycaenidae: Auriades thetis (bellargus), including ab. 2 ceronus, Polyommatus hylas,

Agriades covidon, Hirsutina damon: of Argynnidae: Argynnis adippe, Argynnis aglaia, Pryas paphia: of Coliadae: Colias edusa, Colias phicomone: of Papilionidae: Papilio machaon: and perhaps a few others, were, if not always plentiful everywhere, at least, quite fairly common in places (Charpigny and district; Orsières to Lac Champex; Val d' Entremonts) in 1913; if less so in 1914, except at Grindelwald, July, 1914, where many of these species were most abundant.

One doubts, however, if any theory holds good invariably without exception, although at times, there may be, and probably is-as

perhaps in this case—" something in it."

If this theory be true, and one infers that it may be, then an interesting question arises from the preceding, viz: - Why should sunless seasons produce a scarcer race of Chrysophanids, than of darker butterflies: Erebiinae, Satyridae; of lighter ones: Pieridae, Anthrocharidae; and still more of highly-coloured flies such as the species of Lycaenidae, Argynnidae, Coliadae, Papilionidae, cited above as examples! It is obvious, of course, that damp and want of sun affect all races of Rhopalocera more or less; but it would be interesting to know why they should affect some, to so far greater an extent than others.

Being as yet somewhat inexperienced, I unfortunately neglected to hunt particularly for "foodplants" in the several localities where I found my "Coppers." This I now regret, as the presence of food in abundance or otherwise must have some sort of effect on a race of butterflies. At one spot, however, near Chamonix, I noticed common sorrel (Rumex acetosa) and golden rod (Solidago virgaurea) growing in the rye-fields which appeared such acceptable localities for hippothoë

and virganreae.

However, even were there a scarcity of foodplants—as there may have been—which would account for the meagre race of Chrysophanids, one has still to trace the cause of the absence of food before considering the matter closed. The cause, obviously, is climate. sunless, damp, cold weather affects the *flora* of a district, as it admittedly does, and did in 1913-1914 (e.g., absence of fruit in the Rhone valley in 1913, owing to a sharp frost in April, lateness of hay in 1914, particularly in higher valleys, owing to a vast amount of snow, disease amongst vines and potatoes owing to damp at Charpigny, etc.), then also in their turn the fauna dependent on the flora for their existence, must also be affected. Thus, indirectly, a sunless season would account for a scarcity in a race of butterflies as it appeared to do (at least, as far as my experience goes) in the genus Chrysophanus, in 1913-14, which fact leads one to suppose, as stated above, that "Coppers" are dependent on sun for their existence to a more marked degree than certain species, belonging to darker or lighter genera than Chrysophanus.

SCIENTIFIC NOTES AND OBSERVATIONS.

HEMIPTERA.—In the January number of the Ent. Mo. Mag. Dr. Bergroth shows that there are two British species of the genus Anenvus: A. laevis, Fab. (=tuberculatus, Mjob.), and A. arenius, Duf. (laevis of some authors). He states that avenius seems to be common in England, but that the true laevis is a very much rarer insect, recording specimens taken by Mr. Champion near Woking and others in the Power collection in the British Museum, taken by the late George Norman, the specimens being without locality label, but presumably taken in Scotland. I have examined examples of both sexes of the insect I recorded as A. laevis from Chopwell, Co. Durham, where it occurred in great numbers, and find that it is the true Aneurus laevis, and therefore helps to corroborate the Scotch record.—Richard S. Bagnall (F.E.S.), Hylton, nr. Sunderland.

OTES ON COLLECTING, Etc.

Seasonal Notes.—It is a pleasure to have to record that the last season was certainly an improvement on that of 1912 or 1913 from a micro-entomological point of view. One feature was certainly the abundance of that usually common species Plntella maculipennis (cruciferarum). This is one of those very widely distributed species, occurring even within the Arctic circle. It would be interesting to obtain a list of its foodplants, probably all belonging to the cruciferous order, and to discover whether the larva would eat Tropeolum like some of the Pieridae. One of the first species usually noted in the year is Chimabache fagella, and this was abundant on the tree trunks at Richmond, Surrey, very pale specimens being rare. April 2nd, at Wimbledon, Eriocrania unimaculella was in fine condition and plentiful, while E. purpurella and E. semipurpurella were The newly-awakened larvæ of Coleophora ibipennella were common on the birches. On April 26th a darkly marked Tinea vallescentella was taken in the house. In May larve of three species of Cerostoma, C. radiatella, C. parenthesella, and C. alpella, occurred on oak at Richmond, where the larvæ of Tortrix viridana, Pandemis ribeana and Cacoecia xylosteana were doing a certain amount of damage. Here, also, two larvæ of Epiblema solandriana, and one of Cacoecia podana, were taken off birch. In the same place, on June 8th, while sheltering from a heavy shower, I saw, for the first time, a living specimen of Borkhansenia flavifrontella. It was resting on a birch stem. The common Gelechia diffinis was abundant in June in places where sorrel grew in the turf. Chrysoclista linneella was out unusually early this year in the Avenue at Chiswick. It was a surprise to take, on June 17th, two Prays curtisellus off a small oak tree in the garden, for though there are some quite large ashes in Chiswick. this species has hitherto escaped observation here. So has also Dichrorampha simpliciana, but this occurred this year in July on a plant of Artemisia vulgaris, which has been allowed to grow in the garden. few hours were spent at Whitstable, June 25th; my bag was one pupa off rose and one larva of Gelechia lentiginosella off Genista tinctoria, this yielded a very dark specimen and the rose pupa Tortrix bergmanniana! Gelechia pinguinella was out on poplar trunks at Barnes at the end of July, and later I found larve of Nepticula acetosae on the common, a locality in which I had not noticed them previously. On August 28th, Tinea miscella was recorded for Chiswick for the first time. On May 30th a worn ? Tortrix pronubana occurred at Chiswick, and some larvæ taken off a bay tree in August produced this species. Many others were observed on the wing, the last on October 18th. At Wendover, September 27th, the mines of Nepticula anunlifasciella were found in leaves of rose in the hedges, at the same SOCIETIES. 69

time, N. centifoliella was mining the garden roses in Chiswick. A week or so later the larvæ of Coleophora argentula were gathered from yarrow heads on the cliffs near Brighton. As usual, the year's proceedings were wound up with the capture of Tinea pallescentella, but it was rather late, being December 14th, and the moth occurred on a lime trunk in a road instead of, as usual, in the house.—Alfred Sich (F.E.S.), Corney House, Chiswick. January 25th, 1915.

QURRENT NOTES AND SHORT NOTICES.

We learn that Mr. C. C. Best Gardner, F.E.S., has entered the Admiralty Aeroplane Service.

When last heard of Mr. K. G. Blair, F.E.S., was in No. 1 Con-

valescent Hospital at Boulogne.

Mr. P. P. Graves, F.E.S., is now in Cairo, having with some difficulty succeeded in getting away from Constantinople.

Lieutenant Colonel Manders, R.A.M.C., has been for some time in

Egypt with the British forces.

Dr. Burr, who is taking up an appointment in Russia, writes from Stockholm. He says: "I am stopping here for a day en route for Petrograd, and find it strange to be in a neutral country. The hereditary fear of Russia inclines the Swedes, it seems, to sympathise with Germany, though ready to listen to reasonable discussion of pros and cons. I have enquired for news of enemy-entomologists and am informed that Dr. Horn is at the front somewhere as a Regimental Doctor; Dr. Speiser, who came to the Brussels and Oxford Congresses, is a Doctor of a regiment of field artillery, he was in the advance through Belgium, Aerschot, the Aisne and Ypres, and then moved on to Poland."

The volume of *British Lepidoptera* left unfinished by the late Mr. J. W. Tutt at his decease has now been finished, and is being delivered to the subscribers. It is vol. xi. of the *British Lepidoptera* or vol. iv. of *British Butterflies*. We hope in a subsequent issue to publish a full

review of this important work.

It will be remembered that previous to his turning his attention to the British butterflies, Mr. Tutt had in vol. v. of British Lepidoptera dealt with about half the species comprised in the family Alucitides (Pterophorina). We have been unable to find among Mr. Tutt's papers any material relating to the second half of this family, although there must have been a considerable amount of MS. already accumulated with the view of completion. Dr. Chapman has an amount of microscopical and life-history matter relating to the remaining species, which would no doubt be at the disposal of any one who would take up the task of completing the section. The difficulty is, of course, to find the student who has time, enthusiasm, and opportunity to complete the monograph in the style of our lost friend, as the Rev. G. Wheeler has so ably and successfully done in the recently published vol. xi. with the British Lycanids.

SOCIETIES.

London Natural History Society. — October 20th, 1914. — Dianthecia Luteago var. Barrettii, and Boarmia Repandata, Bred.—

Mr. L. W. Newman, a series of var. barrettii bred from wild larvæ and pupæ from Co. Cork, and from South Devon, the specimens being very varied, and a few showing tendencies to melanism. Also a very varied series of B. repandata including melanic specimens, very pale forms, and ab. conversaria, all from wild larvæ taken in April in the Wye Valley. Varieties of Psilura Monacha. -- Mr. A. W. Mera, a series of P. monacha, bred from ova received from Middlesborough, the original parents coming from Ringwood and North Kent. specimens varied from typical to black, the 3s showing a stronger tendency to melanism than the 9 s. Agriades coridon from Herts. -Dr. E. A. Cockayne, a series of A. coridon from Herts, 1914, including a very fine ab. semisyngrapha and five fine ab. obsoleta forms. ABRAXAS GROSSULARIATA VARS.—Mr. V. E. Shaw, five very dark A. grossulariata bred in 1914, from some 2,000 North London larvæ; also a fine ab. radiata from Eltham. Mr. W. E. King, a fine series of varieties bred from North London, 1914. IRISH INSECTS.—Mr. L. A. E. Sabine, a fine variety of Melitaea aurinia from Co. Sligo, also a remarkable Polyommatus icarus having forewings and body 3, hindwings 2, on superficial appearance. Dr. Cockayne having examined the specimen with a microscope, said that though only a low power was available, he thought he could detect androconia showing that the specimen was gynandromorphous. Euchloris smaragdaria bred.— Mr. J. Riches, a series of E. smaraydaria bred in 1914, including ab. obsoleta, Burrows. Euchloë Cardamines Pupe.—Mr. H. B. Williams, two pupe of E. cardamines, one green and the other ochreous, both of which pupated on the same day, in the same box.

November 3rd, 1914.—Exhibition of Small butterflies.—Dr. E. A. Cockayne, four extremely suffused forms of Rumicia phlaeas from Japan, much darker than any English specimens. Mr. W. E. King. Aricia medon from Wendover, including an immense 2, obsolete undersides, and one partly striated, also Cupido minimus from Horsley, including ab. obsoleta and ab. extrema. Mr. H. B. Williams, four Aricia medon showing obsolescence in the underside spotting, ab. striata underside of Agriades thetis, five specimens of Coenonympha pamphilus ab. pallida, Tutt, from Herts, Rumicia phlaeas ab. infra-radiata, Tutt, two ab. radiata, Tutt, ab. obsoleta, Tutt, and an ab. caernleopunctata, Std., with pallid patches on the forewings, from Wimbledon, also a 3 of the same species with left forewing almost entirely white, from Herts. Irish insects.—Mr. L. A. E. Sabine, a store box of Noctuae from Co. Sligo, 1914, including a remarkably fine series of Agrotis tritici, and a fine form of Epunda lichenea. Boarmia Repandata from London.—Mr. A. W. Mera, comparative series showing the marked darkening that has taken place in the general facies of this species in the London

district during the last 30 years.

The Entomological Society of London.—November 4th.—Mr. Alleyne Leechman, M.A., F.L.S., F.C.S., of Corpus Christi College, Oxford, and St. Hubert's, Main Street, Georgetown, British Guiana; Dr. T. Miyaké, the Agricultural College, Tokyo Imperial University, Komaba, Tokyo, Japan; and Mr. George W. Murray, Dirimu Estate, Binaturi River, Daru, Papua, were elected Fellows of the Society. Reply to the Declaration of the German Professors.

—On the motion of the President, a Resolution was unanimously passed associating the Society with the Reply published in the Times to the Declaration of certain German Professors on the respon-

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sibility of Great Britain for the War. Invitation to Entomologists OF THE ALLIED NATIONS .- The Rev. F. D. Morice then proposed the following resolution: - "That all members of recognised Entomological Societies in the countries of our Allies, residing in or visiting this Country, be invited during the continuance of the War to attend the Ordinary and Annual Meetings of the Society, and to make use of the Society's Library, in the same manner as though they were themselves Ordinary Fellows, except as to the right of voting." This was seconded by Dr. Burr, and carried unanimously. Isolated Colonies of Anthro-CERA (ZYGÆNA) TRIFOLII, AND PARASEMIA PLANTAGINIS.—Commander Walker exhibited, on behalf of Dr. R. C. L. Perkins, specimens of A. trifolii and P. plantaginis showing the effects of isolation. WINGED "Weta."-Commander Walker also exhibited, on behalf of Mr. Morris N. Watt, of New Zealand, a photograph of a "Weta" (Deinacrida sp.) fully winged, the species being usually apterous. Colias erate and HYBRIDS.-Mr. A. H. Jones exhibited a series of Colias erate, from Sarepta, and its supposed hybrids with C. hyale and C. edusa. Meneris TULBAGHIA AND SCARLET FLOWERS.—Dr. G. B. Longstaff exhibited a fine series of Meneris tulbaghia, L., a large and handsome Satyrine butterfly having much the appearance and habits of a Nymphaline. He said that Trimen called attention to the decided liking of tulbaghia for red flowers, mentioning Nerine, Haemanthus antholyza and Disa cornuta. The Rev. G. Wheeler said that amongst the old records of Aricia medon var, artaxerxes, two entomologists published observations on the fondness of this insect for blue flowers. Prof. Poulton observed that the fondness of certain Pierids for yellow flowers might be accounted for on cryptic grounds, and further mentioned Prof. Meldola's observations that in some cases of British butterflies where the ? carried the 3 in flight when paired, the 2 was the more brightly coloured. The Rev. G. Wheeler said that he had paid a good deal of attention to this point for some years, and that the result of his experience was that in the Lycanids the 3 always carried the 2, while in other families, except the Hesperiidae, none of which he had ever seen in flight when paired, the ? carried the 3. Speaking from memory, he could say with certainty that this was the case on the one hand with Plebeius argus (aegon), P. argyrognomon, Polyommatus icarus, Agriades coridon, and A. thetis, and on the other with Dryas paphia, Aryyunis adippe, A. aglaia, Pararge aegeria, Epinephele jurtina, Aphantopus hyperantus, Coenonympha pamphilus, Melanargia galathea, and the common Pierids. What had specially struck him was that he had never seen a single exception to the rule. He suggested that it was rather a matter of weight than of colour, the 2 being generally smaller than the 3 among the Lycenids, whilst in other families it was usually the larger, often conspicuously so. Mr. H. J. Turner said that in all cases he had noticed the ? carried the 3, but that he had never seen paired Lycanids in flight. The President entirely endorsed Mr. Wheeler's observations as to the Lycenids, having seen the 2 of various species carried by the 3. With regard to colour forming an attraction to the 2, Dr. Cockayne commented on the fact that at Royston, where the & A. coridon was so scarce that every specimen was surrounded by half-a-dozen ?s, the ?s also pursued specimens of ab. semi-syngrapha, which is common there, and whose blue colour renders it conspicuous and causes an approach to the 3 in appearance. The proportion of the female forms of Papilio

POLYTES IN NORTH KANARA.—Prof. Poulton read a letter on this subject, written June 27th, 1914, by Mr. T. R. Bell from Karwar, N. Kanara, in Bombay Presidency. The Male and Female of Acrea CHILO OBSERVED IN COITC.—Prof. Poulton said that he had received a letter dated October 6th, 1914, from Rev. K. St. Aubyn Rogers at Sagalla, near Voi, British East Africa, giving confirmation of Neave's discovery (Ent. Mo. May., 1909, p. 171). Males of Ceratopogon MYRMECOPHILUS AND FORMICOXENUS NITIDULUS ON THE HILLOCK OF FORMICA RUFA NEAR BOURNEMOUTH.—Prof. Poulton exhibited specimens and read a note contributed by Mr. A. H. Hamm. New Species of RHOPALOCERA.-Mr. G. Talbot, on behalf of Mr. J. J. Joicey, exhibited specimens to illustrate a paper, by Messrs. Joicey and Rosenberg, on new species of Catasticta. The following papers were read: -" Notes on the Life-History of Plebeius sephyrus var. lycidas," by T. A. Chapman, M.D., F.Z.S., F.E.S.; "Note on the Manubrium of the ninth sternite in the male earwig," by Malcolm Burr, M.A., D.Sc., F.E.S., etc.; "The Opisthomeres and the Gonapophyses in the Dermaptera," by the same. "On the Male Genital Armature of the

Dermaptera," Part I.-III., by the same.

November 18th.—Messrs. Harry George Champion, B.A., c/o U.S. Dept. of Agriculture, Entomological Bureau, Washington, U.S.A.; J. J. Lister, St. John's College, Cambridge, and Merton House, Grantchester; and Rev. James Waterston, B.D., B.Sc., 22, Blandford Road, Bedford Park, W., were elected Fellows of the Society. The President announced that the Royal Society had awarded the Darwin Medal to Prof. E. B. Poulton, a former President of the Entomological Society. Anthrocera meliloti and Parascotia fuliginaria from Camberley.—Mr. E. E. Green exhibited two specimens of an Anthrocera (Zygaena) from Camberley, taken August 20th, 1914, which appeared to be A. meliloti; also a specimen of the rare Hypenid Parascotia fuliginaria taken at light at Camberley, July 21st, 1914. The President said that he should have named the specimens meliloti without hesitation, and Mr. Jones concurred. A REMARKABLE COLIAD.—Mr. E. B. Ashby exhibited, on behalf of Mr. Dickinson, a few butterflies from Hinterzarten in the Black Forest and from Pontresina. Amongst them was a ? Colias, which was regarded by the exhibitor as an aberration of U. palaeno. The Rev. G. Wheeler expressed the opinion that the latter was a hybrid between C. palaeno and C. hyale. It was afterwards pointed out by Mr. Hy. J. Turner that the antennæ were different, one resembling those of C. palaeno, the other those of C. hyale. Parasite imprisoned in the Cocoon of its Host.—Mr. Prideaux brought for exhibition a cocoon of Bombyx quercus with the dead, shrivelled larva inside, together with the empty puparium of a dipterous parasite, which, with the wings unexpanded, lay beside it, imprisoned within the cocoon of its host. BUTTERFLIES FROM CENTRAL SPAIN.—Mr. Simes exhibited a series of Agriades thersites, Plebeius sephyrus var. hesperica, and Melitaea desfontainii from Albarracin, taken in the end of May and the beginning of June, 1914. The following papers were read:—"A Revision of the Mexican and Central American Telephorinae (Fam. Telephoridae) with Descriptions of New Species," by George Charles Champion, A.L.S., F.Z.S., F.E.S. "Descriptions of two New Genera and New Species of Mymaridae from Tasmania," by Chas. O. Waterhouse, I.S.O., F.E.S.

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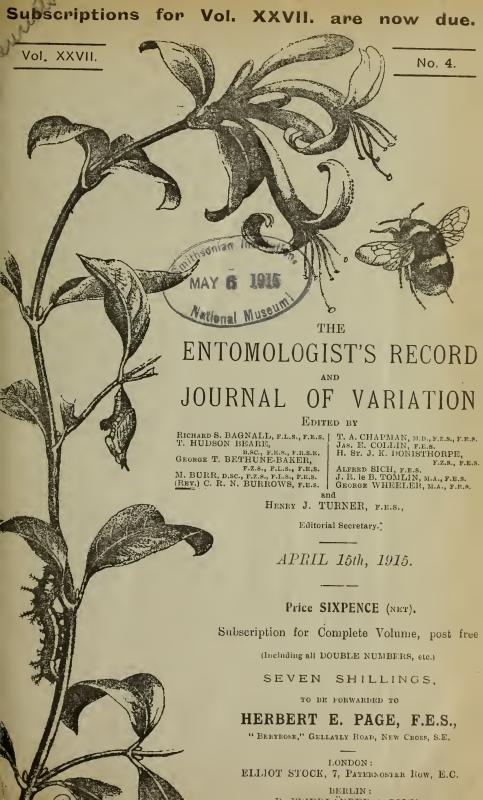
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LEPIDOPTERA ROUND ABOUT SCARBOROUGH, INSONIAN INSTITUTE 73

# Lepidoptera round about Scarborough. MAY 6 1915

It is just thirteen years since I left Mid-Wales for North Wales Yorkshire, leaving a district almost unknown to the entomologist for one that has, at least in the past, been very much better worked. Glancing through my note books I feel prompted to set forth some of the more interesting records therein, in the hope that their perusal may encourage other lepidopterists to visit our country-side and help in its fuller exploration.

By A. S. TETLEY, M.A., F.E.S.

The hinterland of Scarborough falls into three natural divisions the North York Moors, which come close up to the town on the north and west, the Vale of Pickering, which runs east and west and approaches the coast just to the south of the town, and the Yorkshire Wolds, which bound that vale on the south. The moors and the valley are in the great Jurassic Belt, which runs from Dorset northeast to Cleveland. The rocks in the main belong to the Oolitic Limestone. The wolds, on the other hand, are part of the chalk measures. The Vale of Pickering is a broad alluvial plain, bounded on its eastern extremity by the marsh or "carr" land in the neighbourhood of Seamer, some three miles north of Scarborough. On the north side of the valley a number of little dales run up with the moors, nine or ten of them in some seventeen or eighteen miles. Well wooded and well watered, and sheltered from cold winds, these dales afford the best hunting ground in the district. Next to them I place certain parts of the wolds, and last in productiveness, but perhaps first in the interest of their fauna, the high moors.

The butterflies are very poorly represented in the neighbourhood of Scarborough, but as one goes west towards Pickering, or south on

the Wolds, they become far more numerous in individuals, if not in species. Augiades sylvanus and Nisoniades tages are generally distributed, and Adopea place is locally abundant on the Wolds. Of the blues I have taken only Polyommatus icarus and Aricia medon, which swarms on the Wolds and near Pickering, where I have taken a specimen very near to var. salmaris. ('allophrys rubi is a moorland butterfly here, its larva feeding on bilberry. I once saw hundreds of C. rubi at the head of Beedale, resting on stunted mountain-ash trees growing among the heather. Chattendenia (Edwardsia) w-album occurs in Sleightholmdale, to the west of Pickering, and Hamearis lucina I have found in two localities, near Pickering and Helmsley respectively. Enchloë cardamines, very scarce near Scarborough, is common at Thornton Dale and further west. In all the dales Brenthis euphrosyne and B. selene occur, the latter much the commoner and extending higher than its congener. Argynnis aglaia is generally distributed on the moors and wolds and in the dales. Of the Vanessidi, Vanessa io is very rare. I have seen it once only, in Langdale in the spring of 1912. Aglais urticae is common, the two Pyrameids occur frequently,

and of Polygonia c-album I have seen specimens taken at Helmsley. Among the Satyridae I have not so far discovered either Pararge aegeria or P. megaera. Hipparchia semele used to be taken on the Castle Hill in Scarborough, and is on the wolds and near Pickering. Aphantopus (Enodia) hyperantus is locally abundant, with ab. caeca and ab.

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obsoleta. Coenonympha tiphon is our most interesting local butterfly. I have found it in two places on the moors, and searched for it, so far without success, at May Moss, where it has been recorded. A full description of one of these localities, with figures of the butterfly, is to be seen in Mr. Rowland-Brown's monograph in Fascicule VII. of Oberthür's Études de Lépidoptérologie comparée. Last of all, Melanargia galathea was really abundant in 1914 near Cowlam on the Wolds. I turned it up there in 1902; this must be, I think, its most northerly habitat in the British Isles.

I have not mentioned species of general distribution or others like *Plebeius aegon* and *Cupido minimus*, which have been recorded here and

probably only want working for to be found again.

Of the hawk moths, Amorpha populi is our only resident species, and it occurs everywhere in and around the town. Agrius convolvuli and Sesia (Macroglossa) stellatarum turn up in numbers now and then, generally on the cliffs and sea-front. My clearwing records are two only: Egeria (Sesia) tipuliformis and Trochilium crabroniformis (bembeciformis); doubtless the fault is mine. The latter is common all over the town wherever Populus nigra has been planted. I took a dozen and a half in three or four bright mornings last July from a small group of poplar trees in the Valley. Our Anthroceridae are interesting because of the large forms of A. lonicerae which can be got in any quantity at various places along the cliffs, north and south of the town. Adscita geryon is common on Haugh Rigg near Pickering and also at Sledmere, and A. statices in the marshes east of Seamer.

Hylophila prasinana is frequent; Nota strigula rarer in Raincliff Woods than formerly. Nudaria mundana is common generally, but I have not seen a single member of the genus Lithosia. On the moors one gets Diacrisia sannio, Parasemia (Nemcophila) plantaginis, and Phragmatobia (Spilosoma) fuligiuosa, as well as Macrothylacia rubi, Lasiocampa quercus var. callunae, and Saturnia paronia. All except the first are common. The cocoons of P. fuliginosa are easy to find in the spring, spun up in the heather tops. The three last-named are really abundant, especially on the wide stretches of untouched moorland between Newton Dale and the sea. Arctia caia is locally common and Cosmotriche (Odonestis) potatoria I have never found myself, though larvæ were once brought to me. Leucoma salicis turned up once in a friend's garden. I have other solitary records equally difficult of explanation.

All the *Hepialidae* are here, *II. relleda* in swarms on the moors and hillsides, and in every variety. Cossus ligniperda I once took sitting

on an ash tree; it is fairly general.

Among the Drepannlidae, D. lacertinaria occurs at the edge of the moorland above the town and D. falcataria in the woods with Cilix glaucata. Scarborough was at one time noted as a locality for Dicranura bicuspis. I have found D. bifida and D. rinula, but so far not the other. We get several Notodontidae, of course chiefly as larve, though I have taken Lophopteryx camelina, Notodonta dictaeoides, and N. dromedarius as imagines. There are certain groups of small aspens and birches here and there on the moors where one can be almost sure of getting larvæ of the commoner Dicranuridae and Notodontidae, as well as Acronicta leporina, Cymatophora or, and other things.

Year in, year out, I have sugared a line of oak-trees that crown an ancient entrenchment on the edge of the moors overlooking the town, a spot from which one can (or one could) see all the lights of the two bays, the glitter of the Spa, and far away the twinkling white and red of Flamborough. I have taken close on 90 species of Noctuae there, most of them common enough, but now and again there comes a prize among the host of Triphaena pronuba and Xylophasia monoglypha. The latter occurs in great variety, with a goodly proportion of all-black forms. One year Agrotis obscura turned up in some numbers. Neuria reticulata can always be counted on, though it is never common. Agrotis (Lycophotia) strigula, abundant at heather bloom, also comes to sugar, contrary to Barrett's experience. We get a large proportion of the genus Noctua—N. castanea var. neglecta, N. baia, N. glareosa (some lovely forms), N. triangulum, N. c-nigrum, N. stigmatica, N. brunnea, N. dahlii, N. festiva, N. umbrosa, N. plecta, and N. wanthographa. Dyschorista suspecta is common at intervals. In 1911 autumn sugaring was very productive. There were literally thousands of Amathes (Anchocelis) helvola (rutina) of every shade of colour, and A. litura and Amathes (Mellinia) circellaris were just as abundant. Amathes (Orthosia) macilenta and A. lota, Amathes (Anchocelis) lychnidis (pistacina) and Omphaloscelis lunosa (both generally scarce here), the two common Xanthiae, Calymnia trapezina and Hadena protea were all there, and as these species began to go off, Orrhodia raccinii and big Calocampa exoleta took their place.

Another good sugaring ground is a small patch of sandhills some three miles south of Bridlington, at the point where once stood the village of Auburn. Tapinostola elymi is there, to be taken best as it sits, after dark, on its food-plant. I have found there also Mamestra albicolon, Agrotis corticea, A. tritici, A. nigricans and A. ripae, Miana bicoloria and M. literosa, Neuria reticulata and Chariclea umbra, some

in very large numbers.

Heather bloom is worth working in August. Recently I have found Agrotis agathina not uncommon, and Calocampa solidaginis in two or three restricted localities. This is the best way to take Noctua dahlii and N. castanea var. neglecta. Other Noctua worthy of mention are Epunda Intulenta and E. lichenea, the latter on walls and rocks along the coast, Aplecta prasina and A. occulta (once only), Polia chi (abundant and with little variation), Dasypolia templi (rare), Toxocampa pastinum (on the cliffs, at Sledmere, Pickering and elsewhere), Viminia menyanthidis, Hadena glanca and H. adusta (all on the moors), and Celaena haworthii (abundant in the "moss" beyond the Falcon Inn on the Whitby Road).

Of the sallow-frequenting Noctua, the best is Pachnobia leucographa, which is to be got in Raincliff Woods. In 1902 it was fairly common. Taeniocampa populeti one can find as larve, but I have never

been able to work the sallows in its neighbourhood.

I must not forget *Plusia interrogationis*, best obtained in the larval stage. But I recall one evening when, hurrying across the high moors to Ravenscar Station, I found quite a number of the moths at rest on ling and easily boxed. I know of no swifter flier on a bright sunny day.

For the Geometrae the best hunting grounds are the dales, and, close to Scarborough, Raincliff Woods. In the early months the

three Hyberniae are common; of H. marginaria a large percentage are var. infuscata. In April Lobophora carpinata is locally abundant on birch trunks and gives some pretty forms. In the early summer months the woods are well worth working for Asthena blomeri, Venusia cambrica, Odontopera bidentata (with numerous dark forms), Abraxas sylvata, three Emmelesiae (E. affinitata is very common), Hypsipetes ruberata and H. impluviata, Mesolenca (Melanthia) albicillata, and the like. The two pests are Xanthorhoë (Melanippe) montanata and Malenydris (Larentia) didymata. Camptogramma bilineata is nowhere common around Scarborough. I have taken it on Seamer Carr, where

pretty banded forms occur. The moors afford certain species in great abundance and variety, such as Ematurga atomaria, Enterhria (Larentia) caesiata, Hypsipetes furcata (sordidata), Lygris (Cidaria) populata and L. testata. Rarer are Perconia (Aspilates) strigillaria (Seamer and Hackness Moors), Scodiona belgiaria and Xanthorhoe (Melanippe) tristata. The pine woods are good for Cidaria immanata besides the ordinary pine feeding species. In August, 1903, I took this species in great numbers and extraordinary variety. Twice Eucosmia undulata has fallen to the net in a pine wood above Beedale, one specimen in each of two successive years. But a much stranger record is a single Biston hirtaria 3, ten years ago, in Raincliff Woods, which I have worked very thoroughly without a second occurrence. Another moorland species, generally on the lower slopes, is Acidalia fumata. Mid-June to the end of July is the best time for working moors with their pine and larch plantations. One can combine moors, plantations and dales quite easily in a day's excursion, going up, let us say, Beedale to its head, working east or west across the moors, and coming down another dale to the railway, or through Raincliff Woods to Scarborough. In the latter half of July Cayton Bay ought to be visited for Gnophos obscuraria, which hides by day in holes and cracks in the boulder clay. Ortholitha (Eubolia) bipunctaria flies there at the same time. The cliffs are a good hunting ground, and I think it very likely that some of our lost records will be found there again.

I hope at a later date to deal with the other groups (except the *Tineida*). If any lepidopterist decides to come here, I shall be only too glad to place my knowledge at his disposal and, if he so wish, to act as his guide.

# Aberrations of Argynnis aglaia and some other Notes from the Minehead District.

By J. F. BIRD.

Last season I had the extreme good fortune to capture two splendid aberrations of Argynnis aglaia: (1) a 3 example of ab. charlotta on June 29th, and (2) a magnificent white 2 on July 4th. I can find nothing exactly like the latter described in the magazines. Of the aberrations of this species mentioned, the nearest approach is the "silvery-white" specimen formerly in the Clark collection, which realised £7 10s. at Stevens' (ride Ent., vol. xlii., p. 319), but judging from the illustration of that insect in South's Butterflies of the British Isles (pl. 61, fig. 3), my specimen is, in every respect vastly superior. The ground colour is white, slightly tinged with cream; the hind-

wings the same except for a small area towards the costal margin, which is slightly suffused with pale tawny; the thorax, the cloudings at the base of the wings and along the costa of the forewings are a beautiful greenish-grey, while the spots are intensely black. Altogether it is a grand specimen, and as I regarded it before capture while, with outspread wings, it imbibed the sweets from blackberry-blossom. I must confess I suffered from certain nervous tremors, so afraid was I that I should miss it. To get within striking distance I had to force my way through a deep ditch densely overgrown with brambles, but the capture of so beautiful an insect amply recompensed me for the numerous scratches received.

Satyrus semele.—During the last two seasons I have sought for aberrations of this abundant species. In both sexes the variation of the marbling on the underside is considerable, as is also the extent and brightness of the orange-tawny areas on the upperside. Many, also, have additional "blind" spots on the forewing, between the two apical ocelli. I have also taken one of each sex without any ocellus on the upperside of the hindwings, and also a 3 with only one, the upper, apical ocellus on the underside of the forewings.

Epinephele tithonus is another butterfly, abundant in this district, which varies a good deal in the number of ocelli present on both the upper- and undersides. I have taken several interesting specimens with from one to three spots on the forewings, and up to as many as four spots on the upperside of the hindwings. These also vary in the

size of the spots.

Nanthorhoë montanata.—On June 3rd, 1913, my wife netted a most uncommon and beautiful form of this species. The forewings are pure white and, beyond the central fascia, the basal patch, and a row of minute spots faintly visible on the extreme edge, are perfectly devoid of any further markings or cloudings whatever. The central fascia is wide, greyish, and distinctly and broadly edged on each side with deep black; central spot elongate and conspicuous. Hindwings, also, pure white with a light-grey central band, broadly edged with black, running from the costa almost to the inner margin. Cilia on fore- and hindwings almost immaculate, the chequering only visible on careful examination. So much does the specimen differ from the type that I thought, when I first saw it, that something new had been captured. I ought to mention that it is a ?

In 1913, treacling, during September and October, was very productive, although no great variety of species turned up. The four kinds which were easily first in abundance were Agrotis segetum, which showed considerable variation, Peridroma saucia, also variable, Aporophyla nigra and Phlogophora meticulosa, the last a perfect pest. Other insects attracted that autumn were Agrotis ypsilon (common), Noctua c-nigrum, N. rubi, Omphaloscelis lunosa, Amathes lota, A. macilenta and Calocampa exoleta. In 1914, treacling was practically a failure. A. segetum, A. ypsilon and P. saucia failed to make any appearance whatever, while only two A. nigra were seen. Often there would be no lepidopterous visitors at all to the treacled patches, and on the most attractive nights only half-a-dozen moths or so would turn up!

At light we have taken, amongst other things, Miltochrista miniata, Demas coryli, Poecilocampa populi, Macrothylacia rubi (\$\mathbf{x}\$), Pheosia dietacoides, Agrotis puta, A. tritici, Eurois adusta, Luperina (Tholera) cespitis & (also a & netted at dusk), Mamestra albicolon, M. dissimilis, Miana literosa, Pachnobia rubricosa, Petilampa arcnosa, Stilbia anomala (also netted at dusk), Calymnia diffinis, Cleora lichenaria, Pachycnemia hippocastanaria, Anticlea rubidata, A. derirata, Malenydris multistrigaria, Cidaria siderata (and at ivy-blossom), Enpithecia venosata, E. linariata,

E. succenturiata, and E. sobrinata.

Of other lepidoptera my father and I have met with in this district during the last two seasons, the following are perhaps the most interesting: Colias edusa (occurred sparingly during August, 1913), Euchloë cardamines (a fresh-looking 3 as late as June 29th, 1914), Celastrina argiolus (earliest record, April 30th, 1914), Bithys quercus, Callophrys rubi (May 19th-July 15th, 1914), Pyrameis cardui (fairly common in 1914), Dryas paphia, A. adippe, Mimas tiliae, Sesia (Macroglossa) stellatarum, Hepialus hectus, H. fusconebulosa (velleda), H. sylvinus, Nola confusalis, Lithosia complana, Arctia rillica, Spilosoma mendica, Lymantria monacha, Saturnia pavonia, Habrosyne derasa, Thyatira batis, Charaeas graminis, Calymnia affinis, Bryophila glandifera, Anarta myrtilli, Prothymnia viridaria, Bomolocha fontis, Hygrochroa syringaria, Ellopia prosapiaria, Gnophos obscurata, Bupalas piniaria, Chiasmia clathrata, Boarmia abietaria, Acidalia trigeminata, A. interjectaria (dilutaria), A. maroinepunctata (promutata), A. subsericeata, Xanthorhoë galiata, Cidaria immanata, Lygris prunata, L. populata, Enphyia picata, Thera firmata, Ortholitha cerrinata, O. plumbaria, Lobophora riretata, Enpithecia pulchellata, E. subfulvata, E. nanata, E. lariciata, E. indigata, E. exignata, E. tenniata, and Chloroclystis coronata.

I am afraid we have not paid much attention to larvæ, but, amongst others, we have met with the following: Callophrys rubi, Celastrina argiolus, Pyrameis atalanta, Epinephele jurtina, Arctia caia, A. rillica, Phragmatobia fuliginosa, Lymantria monacha (elm), Dasychira pudibunda (walnut and Berberis), Funnea casta (from one case, attached to a grass stem, I bred an apterous ? parasitic fly in July, 1913), Malacosoma neustria, Macrothylacia rubi (swarms), Saturnia paronia (common on heather), Acronicta rumicis, Peridroma saucia (pupæ), Mamestra (Hadena) pisi, Mamestra persicariae, Dianthoecia capsincola, Aporophyla nigra (heather), Phlogophora meticulosa (mentioned because it is such a pest and even takes the place of M. brassicae in our cabbages), Panolis piniperda, Naenia typica, Cucullia verbasci (mullein), Amarta myrtilli, Pseudoterpna pruinata (gorse), Perizoma flavofasciata (decolorata) abundant in the flowers of white campion), Lobophora viretata (buds of ivy-blossom), Ortholitha cervinata (mallow), and Emithecia linariata

(toadflax).

## The Season of 1914 in South Provence.

By HERBERT L. EARL, F.E.S.

The following account of butterfly-collecting cannot claim to be an exploration, as I have broken no fresh ground, but as the period covers the whole season from the beginning of April almost to the outbreak of the war, it may offer some features of interest for collectors.

My first object was Erebia epistygne, and acting on Mr. Wheeler's advice to be early in the field, my wife and I made Aix-en-Provence our base from April 6th to the 25th. Then followed ten days at Avignon, from which centre we worked Pont du Gard. May 4th to

the 14th saw us on the Riviera, and the latter half of the month was passed at Nice. A fortnight at St. Martin Vésubie took us back almost to winter, then came ten days in the milder climate of Annot, and on June 23rd began four weeks at Digne, which brought the season to a close. In 1911, I had worked Digne from May 16th to June 12th, and I was much interested in picking up the season there where I had left it.

With the exception of the fortnight at St. Martin Vésubie, the weather was excellent throughout, bright hot summer from the very first, and at Digne the afternoon thunderstorm, which seems a feature in the day's weather, never interfered with the morning's work. During the whole of the sunny stay at Nice, masses of clouds brooded over the Maritime Alps, and when we trained up to St. Martin we simply went under them and into an English April at its worst, and the change was equally great when we came on to Digne and the July of South France. On the whole the season was decidedly early.

On April 6th we passed streams of Pieris brassicae and P. rapae along the embankments and cultivated fields, as our train did its twelve miles an hour from Marseilles towards Aix, and on the 7th I began work round Cæsar's Tower in quest of E. epistygne. The mistral was blowing strongly, but I managed to put up four fresh specimens; a single Glancopsyche melanops, and two very fresh Gonepteryx cleopatra were the only other signs of life on this barren and and hill. Lower down Anthocharis belia and Pontia daplidice var. bellidice, were beginning to appear, also Colias edusa, Pararye megaera and P. aegeria, Gonepteryx rhamni and Euchloë cardamines. There is a great charm to my mind in early collecting in Provence. There is no bewildering profusion of insects, but everything is fresh and worth looking at, and there is the hourly interest of seeing new species emerge, and the feeling that one is adding five weeks to the English collecting year.

The wind was still too strong for Erebia epistygne on the 8th, but Leptosia sinapis, Colias hyale, and Papilio podalirins appeared. The 9th was a calm day at last, and a good series of E. epistygne resulted, males and females almost equally divided. The only Lycaenidae about were G. melanops and Scolitantides baton, the latter the smallest butterfly I have ever seen, much less than the average size of Cupido minimus. On the 11th we tried another hill, the Gallifet estate, for Anthocharis belia var. bellezina, but nothing appeared except L. sinapis and G. melanops, the latter not abundant, but spread evenly over the district, all males in fine condition. Lower down I also took Erypnis altheae and E. alceae, and a very fine dark form of Rumicia phlaeas. Several Polygonia eyea

were seen, settled on walls, but in very bad repair.

Of hybernated species, Pyrameis cardni was everywhere in force, and continued so throughout the summer. I had already noticed Papilio machaon, Hesperia malvae, Coenonympha pamphilus, Polyommatus icarus (alexis), Celastrina argiolus and Callophrys rubi, or 31

species up to April 11th.

On returning from a useless search over the Gallifet ground on the 13th, I noticed some small whites on the high road, and found them to be Anthocharis belia var. bellezina, though I could not trace them to any likely breeding ground, but on the next day, passing the open gate of an abandoned oliveyard, I noticed three small butterflies just inside, and arrested them on suspicion. They proved to be var. bellezina,

Leptosia duponcheli, and G. melanops. It was such a plainly desirable neighbourhood that we spent the whole day there, and indeed several days, patrolling the delightfully neglected terraces in a space of less than two acres. The result of the day was nine var. bellezina, five L. duponcheli, and several G. melanops, Euchloë euphenoides, and Melitaea cinvia.

April 15th was the best day of the whole month. Twenty-six species were on the wing, including a good number of A. belia, P. daplidice var. bellidice, P. brassicae, very large, with P. rapae and P. napi, L. sinapis and L. duponcheli, the latter nearly all males, a few P. podalirius, and P. machaon drying its wings, and when G. cleopatra sailed in about ten o'clock, attended by G. rhamni, E. euphenoides and E. cardamines, the effect was a brave show of brightness and colour. E. epistygne had now entirely disappeared from Cæsar's Tower Hill, but could still be taken, strange to say, in good condition in a deserted stone quarry at the level of the plain. Why are these quarries, with nothing apparently but grass and stone, so often the pick of the district? The following week saw little development, except that Glaucopsyche cyllarus was relieving G. melanops, L. duponcheli disappeared, and Pararge macra and Melanargia syllius were seen.

On the 27th we trained from our new headquarters, Avignon, to Remoulins, and walked on to Pont du Gard, to which I was kindly directed by Mr. Rowland-Brown. It was a fine opportunity for combining the study of ancient masonry and modern Rhopalocera, and a day to be remembered. While crossing the bridge an excited young German called my attention to a shoal of big fish, three or four pounds in weight, and possibly char from the red underneath; he was clearly an angler, and distressed, as I was myself, at seeing such grand fish swimming about with no one to attend to them. Over the bridge we came to a public notice board with three lines, "défense de fumer," "défense de chasser," and lastly, "défense d'entrer; " taking this as a permit, we entered, but found little within except groups of C. minimus and a few Aricia medon (astrarche). The really productive ground was a sandy waste between the only private house (a staring villa with pompous gates) and the restaurant. Here Thais medesicaste was out in splendid form, with almost everything seen at Aix, except E. epistygne and var. bellezina. Up to the 27th I had taken or noticed forty-two species.

The 28th was spent at Orange, not with the idea of collecting, but of viewing the Roman triumphal arch and amphitheatre, and of course we climbed the hill close to the town where stand the remains of the little fort of William III., destroyed by orders of Louis XIV. This hill was literally fluttering with A. belia and E. euphenoides and the Pierids, in fact I never saw so many of the first two in one spot. The local goats were evidently not allowed among the flowers of this charming spot.

On the 30th, at Arles, when walking round the Arena, besides three black bulls, fated to be baited (à mort) to make a Provençal holiday on the following Sunday, I noticed P. brassicae in numbers around the chicory and mallows growing in the joints of the stone work.

After five days interval, May day saw us again at Pont du Gard. Six species had emerged, Aporia crataeyi, Loweia alciphron var. gordius,

Limenitis camilla, Pontia daplidice, A. belia var. ausonia, and last and least, a single specimen of Hesperia sidae. I had no idea of seeing 11. sidae, and merely netted it to welcome the first Hesperia carthami of the season. (This is why a beginner who catches everything within his radius of action, takes the prize of the day.) My earliest date for its appearance in 1911 was May 8th. This, of course, took us to the same place next day, when careful search resulted in two more H. sidae. Limenitis camilla was now very common over a very limited area of ground. Speaking of L. camilla, this species accompanied me on the wing for six months, during an extended tour in 1911. It began at Carqueiranne on April 25th, became very common at Plan du Pont till the middle of May, and emerged at Digne in June; on the 18th of that month it began at Martigny, flew during July, and finally on my return from a mountain campaign at Simplon and Saas Fée, a second brood, feeble in size and numbers, was ditting about on the cliff walk

near Vernayaz until September 12th.

Arriving at Costebelle, May 4th, the manager met us with the announcement that he was closing the hotel on the 7th, a thing he might have told us before, as half a day was wasted in hunting up new quarters. The hotel season at Hyères seems to be closing earlier than in former years, and we were only able to find accommodation for a week, because an invalid was too ill to be moved, and so kept the hotel open. At Costebelle I had the pleasure of meeting Mr. G. H. Gurney, and we agreed to beat up the quarters of H. sidae on the 6th, at the place where I had taken my one specimen three years before. Of course, I fondly imagine this spot is my own corner, but it is probably well known to every resident and visiting collector at Hyères. H. sidae kept the appointment, and we each returned with a fair series in mint condition. They were extremely active in flight, and it was hopeless to pursue them on the wing, fortunately they were much given to alighting on a yellow hawk-weed and the white cistus, with wings outspread. The only other skipper was Thymelicus acteon. A single worn Thais polyxena var. cassandra fell to me, and my wife found a splendid variety of the large form of Brenthis euphrosyne, fresh from the chrysalis. The spaces between the nervures towards the base of the upper wings are filled in with black, much more so on the right wing than on the left.

On the 7th, following Mr. Gurney's instructions, I took Epinephele pasiphaë near the cemetery. The 8th was a typical Rhone Valley day, cloudless, as we trudged along the hot walk to Plan du Pont; then the sun went in, and nothing could be done. On the 10th we found the ridge which divides Plan du Pont from Hyéres flying the red flag, and rifle practice in full swing, so we gave H. sidae a day off, and found E. pasiphaë swarming up the hillside to within a yard of the top; here it ceased abruptly, as it requires a hot southward slope. It was not in evidence flying on the ground, but two or three could be put up out of every prickly shrub as we brushed against them. They were all in perfect form, females nearly as abundant as the males, and a collector of the "destroyer class" could easily have taken three

hundred in a day.

At La Valette, on the 12th, I noticed two H. sidae in separate localities, one or two E. pasiphaë in a stone-quarry, also Agriades

adonis, or bellargus, or thetis, or whatever new flag that harassed insect

may be flying.

The 14th was spent in moving on to Nice, and a visit next day to the Vallon Obscur once more revealed a single H. sidae. The place struck me as combining all possible objections in a collecting ground; it is too populous, too shut in and damp, and except at the bottom of the gorge, fenced in and unworkable, and lastly, very little to be seen. The Vallon des Fleurs was equally free from flowers and butterflies, and a walk up the stony Montboron resulted in Melanargia syllius alone.

On the 19th, braving the clouds which lay low on the horizon over the Maritime Alps, we left a perfect day at Nice, and trained up to La Vésubie for the day. Half-way up we ran under the clouds and a violent thunderstorm burst upon us just as we arrived, and lasted until the arrival of our returning train; half-way down, we cleared the clouds, and found Nice in perfect sunshine, and were told it had been so all day. The "Côte d'Azur" is a real thing. Two days later we again made the attempt and were rewarded by a fine day. A walk of five miles to La Mescla was more remarkable for romantic scenery than for Lepidoptera. The Gorge was narrow, only space enough at the bottom for the torrent, the rail, and our road: the sides, of smooth slaty rock, rose in some places over a thousand feet, sometimes sheer, at others overhanging the road, which tunnelled through it. Melitaea deione and L. alciphron var. gordius were out, and Polygonia eyea was not uncommon on the rock face. On the 28th we took the mountain train up to St. Martin Vésubie. This was of course very early for an altitude of 3,000 feet, and the thermometer dropped from 74° at Nice to 45° degrees in the bedroom, but I wished to begin the season over again, and compare types of the Alpes Maritimes with insects taken at Aix and Pont du Gard, also I did not wish to be at Digne until about June 20th, and was well content to mark time in a new country. The weather or climate was Swiss at its worst; bright sun in the early morning, then a gathering cloud on the head of an evil neighbouring peak (Malvoisin it should have been named), that overspread the whole sky and wiped out the whole of every noon and afternoon for collecting, then a clearance, and bright sun from 5 to 7 p.m. More vexatious weather for a collector could not well be imagined. arrived in sleet, and after two days tried a morning on the Boréon road. Few specimens were about, though there was a fair number of species, a dark and large form of Rumicia phlaeas, Erebia evias, Polyommatus semiargus, by far the commonest blue, G. cyllarus, C. minimus, and a number of Hesperidae of the malrae group, which always remind me of the dictum of that authority who says, "the more elucidation of this genus, the greater the darkness," also a welcome reminder of the Rhone Valley in the shape of Anthocharis simplonia. I think the latter, ab. flavidior, must have been unusually common in 1913, as I came upon a cleared space in a fir wood where it was abundant, indeed the only white, and almost the only species: it ranged from flavidior, with the yellow predominating on the under side, to a form in which the lower wings were almost entirely covered with dark green. June 1st was a fairly good morning above Venanson, for the first time groups of "blues" appeared on the road, Agriades thetis (adonis), G. cyllarus, and C. minimus, also Melitaea anvinia var. provincialis, and

M. deione. I was glad to take five Erynnis altheae in a corner of a bank on the way up, large and just out, also Coenonympha arcania, the only specimen seen in the district, but it made up for its scarcity by its size, being 42 mm, in expanse. The land is very much enclosed and fenced off, and where open, the goats had utterly destroyed all flowers, and

often pulled up the plants by the roots.

From very bad the weather now became daily worse, and on the 12th we travelled down in pouring rain to Annot, where ten days were spent in exploring a most interesting district, though I felt I was leaving just as it was beginning to be productive. We had now dropped 265 metres, leaving the rigorous June of St. Martin, and butterfly life was everywhere more in evidence. On the 13th a very large form of Polyommatus amanda appeared, contrary to its custom, on a dry hillside, together with Lycaena arion and Cupido sebrus. On the 16th I took a small Theclid flying over a stunted sloe bush, and which I identified as Nordmannia acaciae: it was very fresh, and had a dark purple sheen in the sunlight. Next day I again took N. acaciae, and for several days I found one at the same spot and nowhere else; the district was not more than four yards by two. On the 19th Brenthis daphne, Argynnis aylaia, and A. adippe were flying, and Nordmannia ilicis and Kluqia spini, and a small breed of Polyommatus escheri were to be taken on the privet.

While working for N. acaciae we were hailed by a farmer, on whose land we were walking, not to order us off, but to insist on our accepting a tin of large strawberries, just picked, with the flavour of the sun upon them. Annot is a pleasant district for collecting and I hope to

visit it again.

On the 23rd we travelled down to Digne. Though only 110 metres lower, it was like stepping from spring into the hottest summer. The first afternoon was devoted to a visit to a little gorge leading from the Eaux Chaudes road, which I had seen crowded with Everes argiades and C. sebrus on the Genista in 1911. Just as we emerged from that alley with the strange device, "Rue de Paradis," Apatura ilia was taken, flying along the road, almost the only one I saw. At the entrance to the gorge was a group of privet bushes in blossom, swarming with K. spini and N. ilicis. I never saw any of the family in such profusion, except Bithys querens in the New Forest in 1888. Next to these in abundance came Brenthis daphne and Melanargia galathea, with a sprinkling of ab. leucomelas. C. arcania was abundant and past its best. Among the K. spini I took a variety in which the light streak underside is enlarged to a broad band.

On the 25th I worked the flats by the river on the Eaux Chaudes for Hirsutina admetus, but the lavender was not yet in full bloom. Coenonympha dorus appeared on the 26th on the Les Dourbes road; this insect has a peculiar partiality for hot dry places, without water or vegetation; Rumicia phlacas, too, was found on sand too hot to touch, it seemed to prefer the Brusquet road, which I consider the one barren region out of Digne. That part of the Dourbes road which I will call the "narrows," was difficult of approach, a steep rock on the left, on the right a farmhouse, and a big mongrel left in charge, who held the road against all comers and flew at us each time we passed, and waited for us till we returned. The French were invariably kind and courteous to us, but their dogs never understood what I said to them, and took me

for a "maudit Tenton." The Satyrids began on the 27th with Satyrus hermione, beautifully irridescent and large, quite putting into the shade its humble relative—S. alcyone of Martigny and Brigue. The latter always settled upon the bare road like Hipparchia semele, giving chance after chance to take it, even alighting upon my clothes, while S. hermione never left the wooded gorges, and preferred the tree trunks. Thus far I had only seen three Papilio alexanor, and was told that a local innkeeper was exterminating the larva in its best district, so it

seems in a fair way to be stamped out. On July 2nd I took a single Hirsutina admetus on a half-opened lavender blossom, also Satyrus eirce and Laeosopis roboris. The heat was now intense, butterflies were flying at 6 a.m., and soon after ten o'clock they nearly all ceased flying, and took shelter under the trees. I noted that in the great heat of September, 1911, at Martigny, they reappeared about four in the afternoon, when the sun had set behind the mountains, and flew on till six. On the Dourbes Road the crop had been gathered from a large cherry tree, leaving single fruit here and there, bursting and rotting in the sun, and whenever we passed, a score or more of S. circe, S. hermione, and very large H. semele would fly out, to return as soon as we had left. The new brood of P. eyea appeared on the 4th, and on revisiting the roboris spot I was fortunate enough to take five, three being females in fine condition, also three N. acaciae, which I did not expect, on some dwarf sloes on the same Parnassius apollo were very common, I counted eighteen at once, soaring up the slope, and those that I sampled were larger than the specimens from the Rhone Valley. A single Satyrus actaea was caught on the 7th. S. cordula had been well out for ten days, very fine and large. No H. admetus had appeared since the one taken on the 2nd, but on the 5th they emerged on the flat opposite the Eaux Chaudes, and I took nine at rest on lavender on a cloudy afternoon. On the 10th, at Les Dourbes, I turned up some very large Bithys quercus, Epinephele tithonus, and a female S. circe, measuring 87mm., also a fine series of S. hermione. Returning, we crossed the valley and came up on to the Eaux Chandes road, where my wife called me to look at a new butterfly. She does not herself collect, but from experience I never fail to harry to the spot when any novelty arrests her attention. On the top twig of a high bramble overhanging the road I could see against the sky the unfamiliar outline of the upperwing of Libythea celtis. It was quite inaccessible, but after many attempts I threw some dust over it, and it flew lower down and into It was evidently fresh out that morning. No others were visible, and a long wait at the spot was in vain, but when I passed the place two hours later, there was L. celtis on the same twig. I have often noticed this demand and supply habit in butterflies; the loss is not repaired while you wait, but if you pass over the place the next day there is another. "Uno avulso, non deficit alter." One of the greatest moments of pleasure for a collector is to see and take for the first time a species which he has only seen in books or museum collections. I took eight L. celtis in all at different dates on the same bramble on the same twig. Then came a violent hailstorm, with the afternoon thunder, which knocked the blossom, already pink, to pieces, and I never saw L. celtis again.

The 13th saw the first Polyommatus meleager on the Dourbes road,

and on the 14th Satyrus tidia was taken opposite the depressing bathing-place of the Eaux Chaudes. A hot tramp to St. Benoit along the right bank of the Bléone resulted in several male P. meleager, one S. tidia, and my first and last S. briseis. The next few days saw nothing fresh to report. I have often noticed that a single specimen appears, as the advanced guard of a species, and not another is seen for a week or more, when the main body come on. I had come to Digne especially to get the Satyrids, and a few other species, and I had taken them all, with L. celtis, L. roboris, and N. acaciae besides. My last note, written on the day of our arrival home, reads curiously in the light of recent events: "20th, Digne to Grenoble; 21st, Grenoble to Paris; 22nd, Paris to London; 23rd, Austrian ultimatum to Servia. Where shall I collect in 1915?"

## SCIENTIFIC NOTES AND OBSERVATIONS.

AGRIADES CORIDON AB. ROYSTONENSIS, PICKETT.—In The Entomologist's Record, vol. xxvi., p. 275, appears an article by Mr. C. P. Pickett, in which an asymmetrical form of A. coridon is described under the varietal name "roystonensis." It will probably obviate considerable confusion in the future if Mr. Pickett will more precisely indicate which forms are included under this name. In Mr. Pickett's first paper (Ent. Rec., xxvi., p. 59) he refers to the exhibition of a specimen of A. coridon by Mr. Newman at the South London Entomological and Natural History Society, "a ? specimen with asymmetrical wings, the smaller pair dusted with blue" (ibid, p. 25), and subsequently refers to the capture by himself and others of other specimens. These, he says, have "one side more or less dusted strongly with blue," and as they are "similar" to Mr. Newman's specimen one may assume that all have one pair of wings dusted with blue, and this pair smaller than the other. On page 60 Mr. Pickett says, "I . . . . can now total 43 females of this form, and have also seen a lovely asymmetrical male."

There the matter remained until the publication of Dr. Cockayne's masterly examination of these forms in the Ent. Rec., xxvi., 221, in which, before describing specimens in detail, he says, "Last year . . . . a considerable number of specimens were taken, which had the wings on one side smaller than the other and a variable amount of blue scaling on the small side. Mr. Pickett recorded 43 examples in his paper in the Ent. Rec., xxvi., p. 59, and doubtless more had been captured. The form has recived the name ab. inequalis."

In my own notes, p. 272, I also referred to these forms as "ab. inequalis, Tutt," as I had previously done in describing Mr. Pickett's exhibit at the London Natural History Society (p. 212). Mr. Pickett corrected me (p. 260) though, as his name was not then published, and the specimens appear to come within Mr. Tutt's description (Nat. Hist. Brit. Butts., iv., 30, I do not think I was in error. In any case,

if I sinned, I feel that I sinned in good company.

Mr. Pickett says, in his recent paper, that Tutt "surely meant the usual form where the blue was either streaked or splashed on one side more than the other." This may be so, as no specimen similar to any of the "roystonensis" is mentioned by Tutt, and one is therefore almost

justified in assuming that no such specimens had come to his notice. His description, however, in addition to repeating the description from his British Butterflies (1896, p. 167), quoted by Mr. Pickett, says, "Irregularity in the blue scaling is a not uncommon feature, specimens with one or even all, the wings irregularly and asymmetrically marked with blue scales, are frequently observed," which is surely wide enough to cover the present form, even if that form was not present to the writer's mind.

However this may be, Dr. Cockayne has clearly proved these Royston specimens to be distinct from what we formerly knew as inequalis, in structure, apart altogether from marking, and this may or may not justify Mr. Pickett's action in applying a varietal name. This depends upon whether a form which differs from the normal in possessing sexual characters of the other sex, is properly called an "aberration," and is a question I do not feel competent to discuss. Tutt admits (Nat. Hist. of the Brit. Butts., iv., 13) a suspicion that his inequalis are gynandromorphic in some degree, though it does not appear that he ever investigated them microscopically.

I do not wish to use the columns of the Ent. Rec. for the purpose of criticising the work of a fellow-worker (the paper would be more appreciated by the general entomological public if others exercised the same discretion), but I should like Mr. Pickett to give us a detailed description of ab. roystonensis, and particularly to say if the name

includes :-

(a) The male specimen referred to in the Eut. Rec., xxvi., p. 60.

(b) Specimens with the blue scaling on the larger side. (One was recently exhibited by Dr. Cockayne at a meeting of the London Natural History Society.)

(c) The small symmetrical specimen with blue scaling on all four

wings (Eut. Rec., xxvi., p. 275).

(d) The asymmetrical forms with no blue scaling. (*Ibid.*)

(e) The specimens I recorded (ibid., p. 272) in which there are "blue sprinkled" areas, though the wings are symmetrical as far as size is concerned.

If Mr. Pickett will clear up these points the specialist of the future will at any rate know what he has to deal with, and not have to guess at the meaning of the name. At present one is referred from one paper to another, but arrives at no conclusion.—Harold B. Williams, 82, Filey Avenue, Stoke Newington, N.

## OTES ON COLLECTING, Etc.

Thaumatopea processionea, L. (Processionary Moth).—On our arrival at Pallanza, Lago Maggiore, February 11th, 1914, we came across a band of Processionary caterpillars, evidently going out, or returning from, feeding. They formed a line the shape of a right-angle across the path in the garden of Hotel Castagnola (south aspect). It was then about 2.30 p.m.—sunny, but cold, and snow lay in patches in the shade.

The next morning, which was damp and showery, we again saw a few—possibly the end of another "procession." At the moment it

was fine, although it rained shortly afterwards.

The vegetation in the garden itself was distinctly tropical—but, as

far as one can remember, there was a clump of large trees, possibly

oaks (Quercus), at the entrance.

I see Kirby gives May and June as the regular months when T. processionea feeds (Butterflies and Moths of Europe), so conclude February must be very early for it. He also gives night as its feeding-time—but the hour, on this date, was about 2.30 p.m.

It may possibly have been the next species described *Thanmatopoea* pityocampa, W.V. (p. 143), but the description of the larvae agrees

rather with the former than with the latter species.

"Thaumatopora (Cnethocampa) processionea, L.—Larvæ is bluishblack on back, and whitish on sides, with two small reddish-yellow or

grey warts on each segment."

"Thaumatopoea pityocampa, W.V.—Larva is bluish-black above, with a brownish-yellow transverse projection on each segment, and whitish beneath." (Cf. p. 142, Butterflies and Moths of Europe, W. F.

Kirby.)—Lilian M. Fison, Southcote, Guildford.

HIBERNATION IN A CHURCH.—One Sunday during the morning-service in October last (1914), my father, Mr. J. H. Fison, observed an Aglais (Vanessa) urticae on a north window in St. Mary's Church, Guildford. This morning—Sunday, February 21st—I observed one on a south window of the same Church, which by the way dates back to the Conquest, and conclude from this that it was the same insect which had spent the winter there.

The sun was shining brightly, and the window caught the full force of a warmer mid-day sun than we have had for weeks, probably bringing the butterfly out. It seemed a very robust insect and fluttered energetically to escape into the sunshine outside, evidently not understanding why a window-pane should be transparent and yet the barrier

that it unfortunately so effectively proved.—ID.

HIBERNATION OF VESPA VULGARIS Q.—A "Queen Wasp" was found by my mother, hibernating behind a picture-frame, a few days before Christmas. She states it seemed attached to the wall by some sort of thread, after the manner of some pupe. I do not suppose there is anything unusual in this fact—but as a locality for hibernation it is

at least interesting.—ID.

Records of Coleoptera for South Wales district.—During April, 1914, I was staying at St. David's, Pembrokeshire, at the extremity of West Wales. The country lies wide open. There are great stretches of rough moorland, large tracts of marsh, and a highly indented cliff line, with a small area of sand-burrows in one of the larger bays. The district is, I think, certainly a fine hunting ground for the collecting of beetles. The most productive localities discovered by me were a big stretch of marshland known as Dowrog Moss, a similar but smaller area round Trefeithan Pool, and the boggy bed of the river Alan, known as Merry Vale. The following notes of species taken in this little known district may be of interest.

Carabide.—Carabus arrensis occurred on the moorland, but was scarce; Blethisa unitipunctata occurred on Dowrog Moss and at Trefeithan; Chlaenius nigricornis, Stomis pumicatus, Pterostichus vernalis and P. minor, all on Dowrog Moss. Anchomenus viduus was abundant at Dowrog and Trefeithan; A. piccus far less numerous; Amara anthobia was common on the burrows along with A. lucida; Amara

acuminata, Bembidium assimile, Dromius nigriventris; Anisodactylus binotatus occurred on the cliff line.

Dytiscide.—Agabus paludosus was common and far more numerous than A. nebulosus; Hydroporus flavipes abundant at Trefeithan; H. nigrita common; H. umbrosus, H. lituratus, Coelambus confluens, Rhantus grapii.

Hydrophilidæ were taken Philhydrus coarctatus, Ochthebius bicolor and a single Paracymus nigroaeneus. Within the last two years I have found this last species in three

widely separated localities in S. Wales.

Staphylinidæ.—Philonthus splendens, P. nigrita, P. agilis, P. micans, Quedius fulgidus, Q. manrornfus, Q. scintillans, Staphylinus caesareus, Leistotrophus murinus, Lathrobium quadratum and L. terminatum. Stenus pallitarsis and S. picipennis, were abundant in Merry Vale.

Rhyncophora. — Apion marchicum, A. subulatum and A. hydrolapathi, Rhynchites minutus, Strophosomus faber, Otiorhynchus atroapterus, Alophus triguttatus was common in one meadow, and several specimens of Sitones cambricus were takn on St. David's Common.

Other groups.—Silpha opaca, Carcinops minima, Subcoccinella 24-punctata, Chrysomela banksi, Phyllotreta nigripes and P. atra, Mantura rustica, Crepulodera ventralis, Phaedon armoraciae, Cassida flareola: Meloë proscarabeus was very common on the cliffs.

It may be of interest to add that last August I found a specimen of Criocephalus ferus at Camberley.—J. W. Allen, 266, Willesden

Lane, N.W.

## **WURRENT NOTES AND SHORT NOTICES.**

His numerous English friends will be interested to hear that A. N. Avinov has been serving with the Red Cross in Poland, and has been through some exciting experiences in Lodz and elsewhere. He was in that town during the early part of the winter, when it was entirely surrounded by the enemy; he narrowly escaped being killed by a bomb dropped from a Taube, while he was admiring its graceful evolutions over the very prominent Red Cross flag that was intended to protect the hospital. For a long time the town was entirely cut off, and the small garrison saw the enemy gradually closing in on them from every side; A. N. Avinov witnessed the terrific fighting when the Germans attacked in mass, in entire confidence of victory, only to be defeated and driven back with appalling slaughter by the splendid Russian troops, after five hours desperate battle. Shortly after that the town was relieved, and the twenty-five thousand wounded safely removed to a more secure shelter.

On another occasion he was in a Red Cross train without an engine, when the enemy began firing upon them; the doctors and nurses were obliged to get out on to the line, put their shoulders to the coach, and actually push it down the line; by these means they succeeded after tremendous efforts in getting their train full of wounded out of range of the enemy's guns.

A. N. Avinov is now back in Petrograd, where he has recently read two very interesting papers, one on the subdivision of the Palæarctic Region, based solely upon the Rhopalocera, the other upon the zoogeographical relations of Tibet. In the former he brings the Mediterranean Province right through the plains of Turkestan to the foothills of the great mountains of Central Asia, and includes only Morocco and Algeria, and Tunis in the African portion of the Region; the Turkestan Province he confines to the north western portion of the great mountain system. Tibet is a well-defined province itself, with highly characteristic physical and faunistic features. The manuscript of one important paper, with a number of illustrations, was on its way to England, through the post, when the war broke out, and the precious parcel has disappeared in Germany, the unfertunate author is now engaged in re-writing the paper, which includes the results of his adventurous journey from India through the Himalayas and Kashgar into Russian Turkestan.—M.B.

Russian Entomologists are doing well by their country. A prominent young Economic Entomologist, L. L. Kumberg, has fallen

on the field of honour.

Colonel A. N. Kaznakov, the genial and distinguished Director of the Cancasus Museum, Tiflis, commanded a regiment of Cancasian Cossacks in the autumn, and received three bullet wounds; fortunately he is recovering, and is now anxious to return to the front. V. M. Isaev, a well known Embryologist, who was an officer in the Reserves, has been called to one of the Siberian Infantry regiments.

V. V. Barovsky, the Coleopterist has a staff appointment, and D. N. Borodin, also a Coleopterist, has a commission in an Ural Cossaek Regiment, and has received two decorations for distinguished conduct

in the field.

A. I. Kiritchenko, Lepidopterist, is serving in the Medical Corps. A. V. Martynov, the well-known Trichopterist, author of many important works on that group, is a Reserve Officer in the Artillery. D. A. Smirnov, Entomologist at the Imperial Demesne at Margab (Transcaspia), is an officer in the Turkestan Army, now serving in the Caucasus. J. P. Bazilevsky, a young Coleopterist, has recently returned from the front.—M.B.

Dr. Burr writes from Petrograd: "1 attended a meeting of the Russian Entomological Society the other day, and had a very warm welcome. A few days previously Lattended a very interesting meeting of the Biogeographical Commission of the Imperial Geographical Society, and was elected a member. This makes me a Corresponding Member of the Geographical Society. Our Hon. F.E.S., A. P.

Semenov-Tian-Shansky, is President."

The Spring Meeting of the South-Eastern Union of Scientific Societies will be held on Saturday, April 24th, when a visit will be made to the Zoological Gardens, Regents Park. We will remind our readers that the Insect House in the gardens is a sight not to be missed in the summer, and no doubt at the present time there are plenty of items well worth viewing. Tickets including admission, tea, guide-book, etc., can be obtained by all members of affiliated societies at 2 6 each, from the Hon. Excursion Secretary, H. Norman Gray, 334, Commercial Road, London, E.

Mr. W. Bowater, F.E.S., of Birmingham, is a Lieutenant in the R.A.M.C., and has just gone to the front. During his training in camp he spent some of his spare time at night in writing up some

entomological notes, which we shall publish later on.

On Thursday, April 22nd, the South London Entomological and Natural History Society will hold its usual spring exhibition devoted to objects of all orders other than Lepidoptera. Friends and visitors are cordially invited to bring exhibits. This somewhat recent innovation has, on the two previous occasions on which it has been held, been a marked success, and must be a gratification to the Hon. Curator, Mr. W. West of Greenwich, at whose suggestion it was first held. The exhibition will be held at the Society's Rooms, Hibernia Chambers, adjoining London Bridge, South, and will commence at eight o'clock.

We are preparing a Bibliography of books and articles in magazines in which the sexual apparatus of the Lepidoptera are discussed, figured, or form an integral part of the subject dealt with, and should be pleased to have our attention called to anything published previous to the classical contributions of Buchanan White and P. H. Gosse, in

1876 and 1882 respectively.

Parts iii. and iv. of the Transactions of the Entomological Society of London for 1914, issued in February, 1915, contain the following papers:—(1) A Reprint of Panzer's "Jurinean Genera of Hymenoptera with a translation, introduction and bibliographical and critical notes," by the Rev. F. D. Morice and J. Hartley Durrant. A most important paper from a priority point of view. (2) "New species of Lepidoptera-Heterocera from S.-E. Brazil," by E. Dukinfield Jones. (3) "Notes on the Life-history of Papilio demolion," by Margaret E. Fountaine, with a coloured plate. (4) "Some remarks on the Coccid genus Leucaspis, with descriptions of two new species," by E. Ernest Green, with two plates. (5) "Contributions to the Life-history of Polyommatos eros," with sixteen plates (two coloured), by Dr. T. A. Chapman. contribution to the Life-history of Plebeius sephyrus var. lycidas," with six plates (one coloured), by Dr. T. A. Chapman. (7) "A Revision of the genus Odynerus (Hymenoptera) occurring in the Ethiopian Region," with one plate, by Geoffrey Meade-Waldo. (8) "On Hawaiian Ophioninae (Ichneumonidae,)" by R. C. L. Perkins. (9) "Descriptions of two new genera and new species of Mymaridae from Tasmania," with a plate, by Messrs. Chas. O. Waterhouse and F. Enock. (10) Fortyeight pages of the Proceedings of the meetings.

The Société lépidoptérologique de Genève is one of the most virile of the smaller societies of the Continent. The annual Bulletin issued by the Society is more than a return for the small subscription paid by the members. The matter contained in its pages is of the highest order, and to say that the plates, at least four in each issue, are the work of M. Culot, is to say that they are as nearly perfection as is possible. A notice recently to hand says that the Officers and Council for the ensuing year are as follows:—President, M. J. Jullien; Vicepresident, Dr. J. L. Reverdin; Treasurer, M. H. Gallay; Secretaries, M.M. M. Rehfous and J. Mongenet; Council, M.M. J. Culot, Ch. Blachier, and Dr. A. Pictet. Members pay a subscription of 12 francs, while those who live outside the canton (foreign members) pay only 8 francs. We can strongly urge our readers to belong to this society,

the address of the Treasurer is Pinchat, Geneva, Switzerland.

We wish to again remind our readers that Mr. F. N. Pierce and the Rev. C. W. Metcalfe are working hard at the genitalia of the British Tortrices, and would be glad of any material which can be spared. A single preparation of a species is quite insufficient, as with the small species so much verification is needed. Another great difficulty has cropped up, and that is the numbers of specimens of these "smaller fry" which have been mended with a body from somewhere. Such specimens of course are worse than useless. Already three new British species have been described through the labours of these two enthusiastic workers, and a letter lying before us refers to others. All honour to those whose earnest endeavour is to add to the sum total of human knowledge, and although we sometimes may seem to criticise what is achieved, we cannot but admire the steady and sound advance which has been made.

We have received the announcement that the long promised Monograph of British Ants will shortly be published. All who know the patiently careful work of the author, our colleague Mr. Horace Donisthorpe, will be assured that the volume will be most reliable in all its details. For many years past Mr. Donisthorpe has been collecting a mass of material, partly from his own detailed observation and partly from facts imparted to him by means of his close correspondence with all the foremost workers, students, and authorities of the world, so that every verification of facts attainable has been made. There will be accounts of all British species, including the original descriptions, full literature references, synonymy, life-histories, world distribution, and references to closely allied species which may possibly occur in Britain. Slavery, colony-founding, and the general economy of ant-life will be dealt with at length from the author's long personal observation and experiments, and compared with the opinions and observations of continental and American authorities. The book will comprise some 350 pages, 8vo., and will be illustrated by over a hundred illustrations. We would urge all who are the least bit interested in these marvellously human little insects to send in their names to the subscription list. since such a work necessitates considerable expenditure, and cannot be published at the present time without the assurance to the author of adequate support.

It was with much regret that we saw the disappearance of the City of London Entomological Society, as such, and its absorption into the much larger North London Natural History Society, to form the London Natural History Society, with a very extended range of study, even embracing archæology. For twenty-three years the old Society had issued its Transactions, and although always small in compass they contained records of the meetings showing steady, earnest work and study, and in addition at least one very valuable paper each year, which was generally worth more than the small circulation which the volume must have had. The last part of the Transactions issued, that for the years 1912-13, has been lying on the table for some time, and is in no whit behind that of its predecessors. It contains seven plates illustrative of a paper by Dr. Chapman, "Some Lycenid Notes, with a discussion of the Segmentation of the abdomen in Lepidoptera." L. B. Prout contributed a very valuable paper entitled, "Notes on Thera variata, Schiff., and L. obeliscata, Hb." Dr. E. A. Cockavne. who is in the chair of the new combined society for the present year, contributed a paper, "Notes on Bupalus piniarius, L." Mr. H. B. Williams has an article entitled, "Notes on Coenonympha pamphilus." Mr. Chas. Nicholson and Mr. P. H. Tautz respectively contribute, "Plusia moneta, Treit., in Britain," and "Notes on the Lepidoptera of

the Pinner District." In addition there are the Reports of the various meetings which took place during the two years, and among the matters reported, which were of greater interest, were an exhibition and discussion of Rumicia phlacas, a discussion of the Mendelian Inheritance of Wing-markings, the variation in Vanessa io, Oporabias and Hybrids, Discussion on the genus Zonosoma, and the Annual Addresses by the President, Mr. A. W. Mera, which contain a summary of Lepidopterology for the respective years. The volume can be obtained from the Secretary of the new society, Hall 20, Salisbury House, Finsbury Circus, London, E.C.

Mr. J. Bondroit, the Belgian coleopterist, who was wounded at Ramscapelle, is now invalided from the army through kidney trouble caused, as he quaintly puts it, "by taking too many baths in the Yser with all my clothes on." He is now in Paris, and is engaged in drawing insects, and would possibly be glad to hear from correspondents.

The Journal of Entomology and Zoology formerly the Vomona Journal of Entomology, of Claremont, California, becomes increasingly interesting with each quarterly part. It is always fully illustrated with diagrams, drawings and photographs. In the December number we find (1) An account of the Pseudoscorpions of the Claremont-Laguna Region. (2) Some points in the Nervous System of a large Deep Water Crab. (3) The Starfish of Laguna Beach. (4) An account of the Summer School at Laguna Beach, where much investigation in all orders is carried on by the students, with several photographs of the neighbourhood. (5) Much other matter relating to marine life.

Will the Third Entomological Congress be held in Vienna this year? We read in the November number of the Ent. News, a long note from the General Secretary, Dr. F. Maidl and the President, Prof. A. Handlirsch, giving full details as to tickets and general arrangements as to meetings, exhibitions and excursions. In the last arrangements there is proposed a visit to the Adriatic coast.

## SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON. - December 2nd. - Prof. Lameere, of Brussels, was elected to the Honorary Fellowship vacant by the resignation (and subsequent death) of Dr. August Weismann. Prof. Poulton read a letter showing the circumstances under which Dr. Weismann had been persuaded to sign the declaration of the German Professors. The President announced that he had nominated the following Fellows to act as auditors: On the Council: Messrs. S. Edwards, G. Meade-Waldo, and H. Rowland-Brown. Not on the Council: Messrs. R. W. Lloyd, Hy. J. Turner, and C. O. Waterhouse. Coloration of Desert Hymenoptera.—The Rev. F. D. Morice exhibited a few Hymenoptera of various groups from Egypt, Algeria, etc., showing the silvery pubescence and pale colours frequently characteristic of desert insects. Also a lantern slide showing the seventh ventral segment in Prosopis communis 3. DARK ABERRATION OF ARGYNNIS NIOBE. - Mr. H. J. Turner exhibited a striking aberration of an Argunis niobe with symmetrically coalescent dark markings on the upperside and the silvery spots on the underside hindwing forming a triple basal blotch and marginal streaks. Prev of an African Asilid.—Mr. S. A. Neave exhibited a large series of SOCIETIES. 93

insects, 1326 in all, forming the prey of a common Asilid Promachus A SCARCE BRITISH NEUROPTERON. Mr. W. J. Lucas exhibited a specimen of Drepanopteryx phalaenoides, Linn. (Nat. Ord. Neuroptera), taken about the end of July, 1914, by Mr. E. A. C. Stowell, B.A., at Bexhill. A MOVEABLE MICROSCOPIC STAGE. - Dr. 11. Eltringham exhibited a little machine of his own invention consisting of a mechanical stage specially adapted for the microscopical examination of pinned insects, and so contrived as to admit of the insect on its pin being turned completely round on both a vertical and horizontal axis, without its departing from the centre of the field or the focal plane. An Australian Lycenid Larva resembling the flower of the "Wattle," on which it feeds .-- Prof. Poulton exhibited the flowers of an Acacia, probably A. baileyana, F. v. Muell., together with a female Lycarnid, Nacaduba biocellata, Feld., and the pupa case from which it had emerged. The likeness, mainly due to the long yellow hairs with which the larva was clothed, was increased by its attitude, the body being rather strongly curved. Dr. G. D. H. Carpenter's observation of the epigamic use of its anal brushes by the male AMAURIS PSYTTALEA, PLÖTZ.—Prof. Poulton read a note on this subject, from a letter written to him, July 23rd, 1914, from Kome Island in the N.W. of the Victoria Nyanza. Dr. G. D. H. Carpenter's observations on Dorylus Migricans, Illig., in Damba and Bugalla Islands.—Prof. Poulton read a record of observations from the same letter as that quoted in the preceding note on A. egialea, giving Dr. Carpenter's further conclusions as to the habits of the driver ants of these islands in the N.W. of the Victoria Nyanza. The following paper was read: - "Further Observations on the Structure of the Scent-organs in certain Brush-bearing Male Butterflies," by H. Eltringham, M.A., D.Sc., F.E.S.

The South London Entomological and Natural History Society.

—December 10th.—New Members.—Mr. W. Schmassmann, F.E.S., was elected a member. Paper.—Mr. W. J. Lucas read a paper "The British Long-horned Grasshoppers" and shewed a large number of lantern slides in illustration. Exotic Long-horned Grasshoppers.—Mr. H. Moore, a drawer of Decticinidae, long-horned grasshoppers, containing Decticus albifrons, D. intermedius, D. tessellatus, D. retrucirorus, etc. Mr. Step, a long-horned grasshopper, Hetrodes petersi, female, from S. Africa, both sexes were said to be apterous. Mr. A. E. Gibbs referred to the two large British sawflies, Sirex gigas and S. noctilio, and exhibited their large parasite Rhyssia persnasoria from the neighbourhood of Berkhampstead. He also read notes on the species referred to. Correction.—In the report for November 12th

last, Pyrameis atalanta should be Pyrameis cardui.

January 14th, 1915.—Teratological examples.—Dr. Chapman exhibited an Authroceva exulans with six wings, an A. authyllidis with three tarsi on the left mesothoracic leg, and an A. achilleae with symmetrical wing notches. Pupal habitations.—Dr. Chapman also showed exotic lattice-work cocoons, probably Syntomid or Lithosiid, and pupal burrows of Scardia boleti, showing the trap-door closing the cocoon proper. Mr. Moore, cases of Psychidae from the Island of Rhodes, cases of Occiticus kirbii from Antigua, etc. Mr. R. Adkin, various cocoons of British species of Lepidoptera. Paper.—Mr. Adkin then read a paper entitled "Some Pupal Habitations." A field

MEETING NEARLY 300 YEARS AGD.—Mr. Sich, read an extract from the "Flora of Middlesex," Trimen and Dyer, 1869, giving an account of a natural history field meeting which took place in 1629 to Hampstead Heath.

January 28th, 1915.—Annual Meeting.—The Balance Sheet and the Report of the Council were read and adopted. The President read his address dealing with the position and work of the Society during the past year, and with general entomology during the same period. The usual votes of thanks were passed. Electrons.—The Officers and Council for the session 1915-16, were then elected. Ordinary meeting.—Examples of variation in British Lepidoptera.—Mr. Buckstone exhibited a bred series of Bipalus piniaria showing much variation; aberrations of Hipocrita jacobacae, smoky, streaked with pink, and entirely smoky hindwings; and Spilosoma menthastri, which on emergence had a pink flush which was evanescent. A food pest.—Mr. Edwards, living specimens of Ephestia kühniella with pupe and cocoons. Aberrations of A. Grossularia.—Mr. G. T. Porritt, a fine series of ab. nigrocostata and ab. nigrosparsata of Abraxas grossulariata.

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.—November 16th. —New Member.—Dr. W. J. Fordham, The Villa, Bubwith, near Selby. Reports of Field Observations.—The subject for the evening entitled "The most interesting Field Observations made during the last Season" gave rise to a discussion which was entered into by most of the members present. The Genus Bembidium.—Mr. R. Wilding brought his collection of the genus Bembidium (Coleoptera) and made descriptive remarks upon the occurrence and peculiarities of each species, particularly mentioning the following, viz.—Bembidium 5-striatum, B. fumigatum, B. schuppeli, B. nigricorne, B. stomoides, B. lunatum, B. testaceum, B. anglicanum, B. fluriatile, B. prasinum, B. adustum and B. argenteolum. Varieties of British Lepidoptera. Mr. A. W. Hughes exhibited a yellow variety of Enchelia jacobaeae, a series of Epinephele jurtina (janira) including an example with strongly pupillate spots on the upperside of the hindwings, also a specimen of Agriopis aprilina taken at sugar on the Crosby sand-hills. Micro-Lepidopters. -Mr. W. Mansbridge, the following micro-lepidoptera, viz. - Tortrir pronubana, bred from larvæ found in the palm house in one of the Birmingham parks by Mr. W. Bowater; the caterpillars were doing great damage to the acacias in the house. Peronea variegana with vars. albana and cirrana bred from Wavertree larvæ; Mixodia schulziana, a series from Delamere Forest where it was plentiful though not previously on record for the locality; Paedisca solandriana, selected varieties from Huddersfield and Hebden Bridge, W. Yorks.; Ephippiphora trigeminana from the sand-hills at Crosby, very small specimens; and a fine series of Eupoccilia dubitana, light and dark forms from the same locality.

December 21st.—Annual Meeting.—New Members.—Messrs. Vincent Fogarty, 56, Bolton Road, Ewood, Blackburn; and Wm. Buckley, 59, Roseneath Road, Urmston, nr. Manchester. The Election of Officers.—The usual business of an annual meeting was transacted and the following members were elected as officers and council for the ensuing year, viz.:—President: Prof. R. Newstead, M.A., F.R.S. Vice-Presidents: R. Wilding; J. Cotton, M.R.C.S., etc.; J. R. le B. Tomlin, M.A., F.E.S.; H. R. Sweeting, M.A. Hon. Treasurer: J. Cotton.

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Librarian: F. N. Pierce. Hon. Secretary: Wm. Mansbridge, F.E.S. Council: L. West; P. F. Tinne, M.A.; S. P. Doudney; Wm. Webster; R. S. Bagnall, F.L.S., F.E.S.; Chas. Frederick Burne; J. W. Ellis, M.B., Ch.B., F.E.S.; Arnold W. Hughes; J. Collins. Annual Address. -The retiring president, Mr. R. Wilding, read his address, in which he reviewed the entomological events of the past year in an able and interesting manner. Species of Tortrices New to Britain .- Mr. F. N. Pierce exhibited and described the hitherto unrecognised species of Tortricidae as follows, riz.:—Cnephasia genitalana, found in various collections mixed with other species of the genus. Hab. Essex and Kent. Poecilochroma pomedavana, an apple feeder, until now considered to be a variety of P. profundana. Hab. Devon and Herefordshire. Lipoptycha acratana, for some time represented only by a single specimen in his collection, but lately found in Threlfall's series of Dichrorampha tanuceti. These have all been distinguished through examination of the genitalia and full descriptions are published in the Ent. Mo. May. for January 1915. British Lepidoptera.—Mr. W. A. Tyerman showed a fine series of Sphinx ligustri, most of which had laid over until the second year before emerging; a fine and long series of Nanthorhoe (Melanippe) galiata from Ainsdale; the ova were deposited in September by a very late female; also from Ainsdale, Acronicta leporina, Cucullia chamomillae, and Chariclea umbra. An Indian Cicada.—Mr. Wm. Webster, a large species of Cicada from India.

THE NORTH LONDON NATURAL HISTORY SOCIETY.—December 1st, 1914. Gynandromorphs exhibited.—Mr. A. W. Mera, a mixed gynandromorph of Saturnia carpini, right side predominantly 3, but with large 9 patches, antennæ intermediate, and a regularly halved gynandromorph of Boarmia repandata, left side 2, right 3. Mr. V. E. Shaw, an Amorpha populi, bred June 10th, 1909, left side 3, right 2, antennæ, genitalia, and wing markings, the line of division along the centre of the body being clearly defined. Dr. E. A. Cockayne, Polyonmatus icarus, a symmetrical gynandromorph with upperside predominantly 3, underside predominantly 2, another of the same species predominantly 2, but with streaks of 3 colour on right forewing and both hindwings. Androconia were numerous on the male areas and the genitalia externally purely 3; four gynandromorphous A. populi all showing mixture of 3 and 2 parts in their external genitalia, three were predominantly 2 in their internal organs, having ovaries but no testes, the other was predominantly 3; a Smerinthus hyb. hybridus 3; two gynandromorphs of Anthrocera hippocrepidis (doubtful); a heterochroic gynandromorph of Hemerophila abruptaria, right side 3 ab. fuscata, left side ? typical; a heterochroic gynandromorph of Abraxas sylvata (ulmata), right side & ab. pantarioides (?), left side & typical; 37 gynandromorphous Agriades coridon with one side smaller than the other, and having blue scales and androconia on the smaller side, one with blue scales and androconia on both sides, two with streaks of 3 colour; also drawings of dissections of gynandromorphous lepidoptera of various species. Mr. H. B. Williams, a regularly halved gynandromorph of Fidonia piniaria, left side, ♀, right ♂, a♀ Ematurya atomaria with wing coloration of the 3, a ? Euchloë cardamines with a splash of 3 colour on underside of left forewing, a regularly halved gynandromorph of Amorpha populi, left side ?, right 3, a mixed gynandromorph of the same species, left wings and antennæ  $\mathfrak{P}$ , right antennæ and (apparently) wings intermediate, body apparently  $\mathfrak{F}$ , also specimens of Agriades coridon ab. inaequalis, Tutt, and ab. roystonensis, Pickett. Dr. Cockayne delivered an instructive and interesting address on "Gynandromorphism." CIDARIA SPECIES FROM SCOTLAND.—Mr. L. B. Prout, series of Cidaria truncata and C. immanata from a Scotch

locality, showing considerable variation.

December 15th, 1914.—Mr. L. B. Prout, a short series of Melanthia bicolorata bred from Forres ova, showing an interesting modification of the plumbata form of variation, the forewing being largely infuscated, but with parts, in particular a broad subterminal line, remaining white, while the hindwing showed infuscation in the terminal region only. The following officers were elected for the session 1915:—President: Dr. E. A. Cockayne, M.A., M.D., F.E.S. Vice Presidents: Mr. A. Bacot; Rev. C. R. N. Burrows; Dr. T. A. Chapman; Messrs. M. Greenwood; F. J. Hanbury; A. W. Mera; L. B. Prout; and R. W. Robbins. Trustees: Messrs. A. W. Mera; C. S. Nicholson; and L. B. Prout. Librarians: Messrs. W. E. Glegg, and A. E. Mera. Curators: Messrs. S. Austin; C. S. Nicholson; A. J. Willsden. President of Research Section: Mr. E. B. Bishop. Treasurer: Mr. F. G. Dill. Secretaries: Messrs. J. Ross, and H. B. Williams. Council: Messrs. F. B. Cross; L. B. Hall; L. W. Newman; H. E. Stevenson; and H. Worsley Wood.

## BITUARY.

### Major Henry H. Lyman, M.A., R.C.I., F.R.G.S., F.E.S., etc.

By the appalling disaster that befell the steamship "Empress of Ireland" in the River St. Lawrence, last May, Canada lost one of her

leading entomologists.

Born in 1854, he in very early life developed a taste for entomology, and in 1875 joined the Montreal Branch of the Entomological Society of Ontario, and always took the liveliest interest, not only in the success of the branch, but also in the parent society, which a couple of years ago celebrated its fiftieth anniversary.

His splendid collection, with his library, has been bequeathed to the McGill University, with a sufficient endowment fund to cover expenses in maintaining it, and it is to be accessible to all students of

entomology.

In his mercantile life he was a most busy man, but had always time to give any information willingly to any entomologist, this, with his genial disposition, endeared him to all who had the privilege of working with him.

His military career ended in 1885, when he retired from the Royal

Scots of Canada with the rank of Major.

He was a strong Imperialist, and was one of the deputation which waited on Lord Salisbury in 1886 begging for an Imperial Conference for the whole of the British Empire. This conference was called and held the next year. He also strongly advocated Imperial preferential trade within the Empire, and that Canada should bear her share for Imperial defence.

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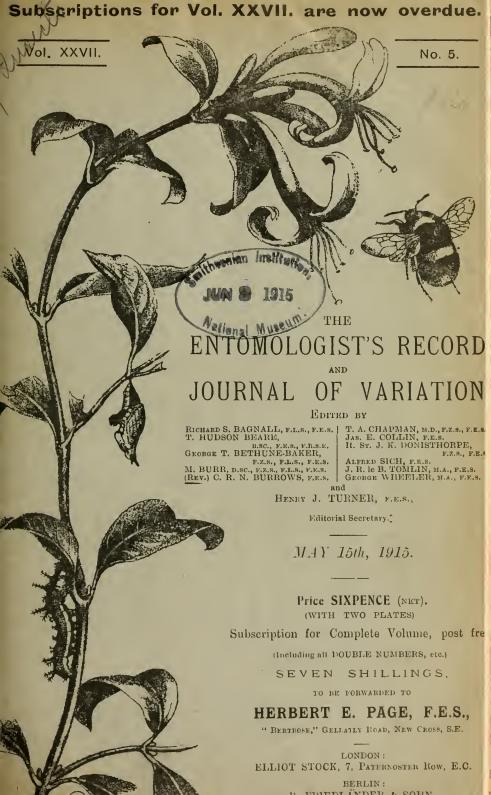
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Vol. XXVII. Plate II.



AGERONIA SPS. AN UNKNOWN ORGAN.

Photo, J. L. Reverdin.

# A hitherto unknown organ in the Ancillary Appendages of the Lepidoptera (Ageronia sps.). (With plate.)

By DR. J. L. REVERDIN (Geneva).

(Translated by P. H. Muschamp, F.E.S.)

Among some mounts that M. Fruhstorfer had begged me to make to facilitate his studies, was one of the  $\mathcal J$  genitalia of an Ageronia, and I was surprised to find in this butterfly an organ unknown to me. M. Fruhstorfer has since then kindly handed me the abdomens of 26 species of this genus, and in all I have found the same organ; it

belongs exclusively to the 3.

Here is a description of this organ: It is placed in the last section of the abdomen and is formed of a chitinous rod of varying length and springs from the upper-posterior angle of the 8th abdominal sternite. The form and curve of this rigid rod would appear to be constant; it bears at its extremity thick pointed chitinous spiculæ, varying in different species, and all along the rest of it fine hairs and a certain number of spiculæ, which in certain species are more abundant than in others. The rods are very long in certain species, shorter in others; they are rectilineal or slightly curved, generally strongly concave at foot, their extremity is often clubbed, sometimes imperceptibly; the upper border of the sternite seems to be thickened; it is both extended with the wand to its source and prolonged on its proximal side to a point considerably beyond the sternite (figs. 2 and 4).

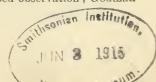
When the genitalia are completely sheathed by the abdomen, the extremity of the rods extends beyond that of the abdomen, and in dry specimens these rods are easily broken off or deprived of their spiculæ; among the abdomens, which I received from M. Fruhstorfer, such

accidents had been rather frequent.

Each species of the genus Ageronia possesses these organs and of a form peculiar to the species. The accompanying figures show the different types of rods, and it will be seen that the diagnosis of a species might be established by an examination of the rods alone. I must confess that I possess only one specimen each of many species, but those of which I have several specimens (four specimens apiece of five species, and two of several others), the form of the rods may be said to be constant, any slight difference in the mounts being due to a difference in their orientation. As I just observed, the spiculæ are liable to be broken off, but it is always easy to ascertain their true number by counting the little circles in the surface of the rods, for these are the points of insertion of the detached spiculæ. examples of which I have had photographs made are naturally those which seemed to me to be most nearly intact. The spiculæ are generally densest at the extremity of the rods, but in certain species, e.y., A. saurites (fig. 5), they are dense throughout the whole length. The spiculæ terminate in pin points (figs. 5 and 6) or in lance-heads (figs. 1, 2, 3, and 4); and in some of the other species, the distal border of the sternite, below the spot where the rod is inserted, is furnished more or less abundantly with long, heavy spiculæ.

This peculiar Ageronia organ has not escaped observation; Godman

Мау 15тн, 1915.



and Salvin mention it but give no details other than* "There are two rods attached to the upper edge of the ventral portion of the terminal segment of the abdomen."

To sum up: This organ is peculiar to the 3 and displays distinct

characteristics in all the different species I have examined.

My colleague M. Jullien discovered an organ in certain Satyridae. This organ, called by Fruhstorfer "Jullienische Organ," is composed of thick, chitinous, very darkly coloured rods with dentated or pointed extremities; these rods are inserted in the last abdominal tergite (not the sternite); they are found in Satyrus alcyone, S. hermuone, S. syriaca, and S. semele, and in Epinephele jurtina, in which latter there is one instead of three or more rods on either side; but this one rod is really formed by the soldering together of several into one multidentated rod. In S. hermione and S. alcyone the insertion is made in a sort of wing detached from the lateral parts of the tergite, whereas in E. jurtina it is made on the slight prolongation of the somewhat flattened exterior angle of this sternite.

The analogy is evident if not close; it is true that the points of insertion and the dimensions of the rods are very different in Satyrus and in Ageronia. There is, however, analogy enough to cause us to

suspect that their functions are similar.

Dampf thinks that Jullien's organs are scent organs, but Jullien himself believes them to be of a tactile order, and the latter hypothesis seems more in keeping with their constitution; it is hard to see how

these thick rods can disperse a volatile substance.

A third solution of the problem suggests itself to me. I have read a remark by Fritz Müller incorporated in Dr. G. B. Longstaff's work. "Just as the Ageronia, four species of which I had an opportunity of observing in some numbers during the past summer, only make the remarkable crackling sound on the wing and during the courtship, so also, in all probability, butterflies equipped with brands, tufts, etc., only distribute their scent under the same circumstances." May we not deduce that this crackling sound is caused by the friction of the spiculæ against other parts of the genitalia, and that the Jullien organ has the same function, the action being modified by their situation; it would seem almost as though the motionless organ of Ageronia were rubbed by the mobile valves, whereas the mobile spiculæ of the Jullien organ in Satyrus rub against the valves or uncus; the way in which the Jullien organ is inserted leads us to suppose that it can be moved at will. I submit my hypothesis to the numerous and clever English observers, and to the Swiss field-workers; they will perhaps tell me if E. jurtina and S. alcyone perform on the castanets as Ageronia does in order to charm its lady mate.

#### EXPLANATION OF PLATE II.

Fig. 1. Ageronia februa, 3, genitalia and Godman-and-Salvin organ.

Fig. 2. Ageronia arete, 3, 8th abdominal segment.

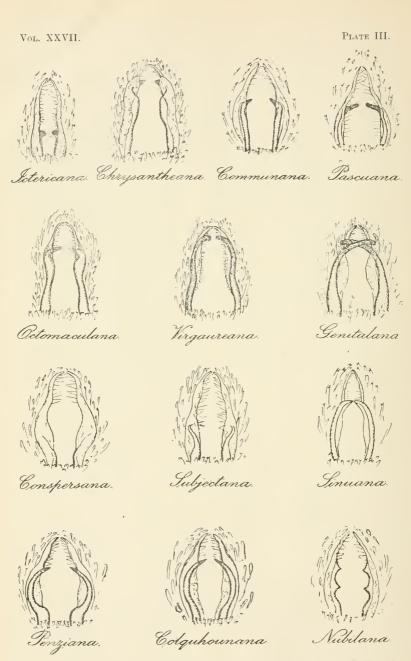
Fig. 3. Ageronia obidana, 3, 7th and 8th abdominal segments.

Fig. 4. Ageronia jritilla, 3, 8th abdominal segment.
Fig. 5. Ageronia saurites, 3, 8th abdominal segment.
Fig. 6. Ageronia sellasia, 3, 8th abdominal segment.

† Butterfly-hunting in many Lands. George B. Longstaff. p. 616.

^{* &}quot;Biologia Centrali-Americana." Insecta Lepidoptera Rhopalocera, by F. D. Godman and D. Salvin. Vol. i., p. 268.





Del. J. W. Metcalje.

Diagnostic details in the Genitalia of the Genus Cnephasia.

The Entomologist's Record, etc., 1915.

# An easy method of identifying the species of the genus Cnephasia = Sciaphila (Tortricidæ). (With plate.)

By F. N. PIERCE, F.E.S., and the Rev. J. W. METCALFE, F.E.S.

The Sciaphilas, as they are generally termed, have long presented such insurmountable difficulties to collectors that they have practically given up the genus in despair, and have placed such specimens as they have received from correspondents in their cabinets under the name sent rather than attempt to settle their identity for themselves. That this state of affairs is general is evident from the mixed series forwarded for examination from many collections. Here the study of the genitalia steps in, and separating the specimens with indisputable accuracy removes the problem from the sphere of individual opinion.

Entomologists, when in future setting their captures, would do well to open the valvæ as far as possible whilst the insects are still on the boards, and thus make subsequent examination a simple matter.

In order first of all to discover how many British species the group contained it was necessary to make microscopical mounts of many named specimens and unnamed varieties. This having been done it was not a very difficult matter to determine to which species each form belonged. Having thus obtained reliable examples of all the British species, the question as to whether a simpler and less destructive method could not be devised for determining the species by means of the genitalia, since collectors not unnaturally object to the breaking up of each specimen, in order to discover to what species it belongs. With this end in view a thorough examination was made of dried but unmounted examples of all the species, using the already mounted examples as a guide. The method of working is as follows:—

Run a knife across a piece of flat cork, and then pencil the slit so that it may be readily found. Next, by pushing the head of the pin (holding the point by the forceps) into the slit, the insect is held securely with the ventral surface of the abdomen in position for examination under the microscope. Having brought the genitalia into focus and arranged a bull's eye condenser so as to illuminate brilliantly the part, remove by means of a small sable brush (W. and N., No. 00) sufficient scales to expose the junction of the valvæ. At first it will probably be found necessary to lay bare both valvæ, but when the eye gets accustomed to the appearance the merest touch is sufficient to determine the species. With the aid of the drawings, herewith given, of the genitalia as thus seen with the scales removed, no one should have the smallest difficulty in naming his male captures. Once having located the males, but little further trouble should be experienced in mating the females.

The different species are subject to great variation in wing markings, but perhaps the most difficult to determine superficially are those which tend towards albinism, the markings almost entirely disappearing, and we are left with a chalky white specimen and nothing to guide us as to its species except the shape of the wing, which is so variable as to be absolutely useless. The examination of the genitalia, however, at once determines the question.

Before describing the distinguishing features of the genitalia in each case, attention must be drawn to certain difficulties in the nomenclature.

Following Meyrick's *Tortricidae*, published by Wytsman, which I have found of the utmost value in nomenclature, we read, p. 44.

### Genus Cnephasia, Curtis.

CNEPHASIA, Curt., 1826, type pascuana, Hüb. Ablabia, Hüb., 1816, type osseana, Scopoli. Nephodesne, Hüb., 1816, type penziana, Thunb. Sciaphila, Treit., 1829, type wahlbomiana, L. Argyroptera, Dup., 1834, type argentana, Clerk.

The whole group falls naturally in accordance with the genitalia into two sections:—

(a) The CNEPHASIA (Curt., 1826) group type pascuana.
(b) The Nephodesme (Hüb., 1816) group type penziana.

In this division (a) would contain of the British species Cnephasia octomaculana, C. conspersana, C. chrysantheana, C. pascuana, C. rirgaureana, C. genitalana, C. subjectana, and Sphaleroptera ictericana. (b) would contain Nephodesme penziana, N. colquhonnana, N. sinuana, N. nubilana, with Ablabia osseana, Argyroptera argentana, and Tortricodes hyemana.

The generic name Sciaphila, Treit., 1829, of which wahlbomiana is the type, must fall, not only on the ground of priority, but also because the type wahlbomiana does not, as we shall presently show, represent

any particular species.

What then is wahlbomiana? As early as 1873, in the Entomologist's Annual, p. 50, O. Hofmann quotes Heinemann's opinion that incertana (subjectana) wahlbomiana, communana, alticolana, minorana, and virgaureana, are simply varieties of the Linnean wahlbomiana. "The wahlbomiana group as it can scarcely be rightly described as composed of one species." Heinemann. Vol. ii., p. 58. Ent. Ann., p. 68. Hofmann, Entomologist's Annual, 1873, p. 53, writes:—"Wahlbo-

Hofmann, Entomologist's Annual, 1873, p. 53, writes:—" Wahlbomiana, communiana, alticolana, virgaureana, derivana, and paraliana, seem all to be only different forms of a single species, which shows an extraordinary tendency to vary even in the larval state, as will be

pointed out further on."

Mr. Meyrick (in litt. 18:12:24) writes:—"Wahlbomiana. In my opinion this name is not applicable to any species, having probably been originally a confused jumble of several. But its use on the continent is certainly for the species we call (in my opinion correctly) ringaureana, though not infrequently authors still mix up other species

with it. I think you may neglect it."

Kennel, Zoologia Palaarktischen Tortriciden, Stuttgart, 1908, figures the genitalia of wahlbomiana. The figure is, however, not good enough to decide whether it represents chrysantheana, pascuana, octomaculana, or communana, but there is sufficient detail to say that it is certainly not rirgaureana. Kennel includes under Cnephasia, wahlbomiana, alticolana, virgaureana, derivana=paraliana, chrysantheana, Dup.=chrysantheana, H.-S.=assinana, Hw. (Wood, fig. 1,000)=alternana, Wilk., pasirana (rect. pascuana), Hb.=pasirana, H.-S.=obsoletana, Stph. (Wood, fig. 1,003), logiana (Wood, fig. 1,002)=interjectana (Wood, fig. 1,001).

This list includes all given by Heinemann except *incertana* and its var. *minorana*, which he evidently rejects because of the retractile

ovipositor of the female, and communana, which Kennel and Hofmann

evidently consider a good species.

Mr. A. Thurnall, in a letter to Mr. Mansbridge, 26:1:15, writes:— "Wahlbomiana I never could make out. It appears to me that this name has been used (in this country at all events) as a sort of entomological scrap-heap on which to pitch all dubious specimens of this difficult genus!! The late Mr. Ragonot told me once (in litt.) that the species was a good one and not unlike subjectana."

Bankes, Ent. Mo. Mag., 1906, p. 84, writes of "the various forms

included by Rebel under the all embracing term wahlbomiana."

From the above it is evident that *wahlbomiana* is a hotch-potch, a group of species to which any dubious specimen can be relegated. It must be left to those versed in the law of priority to state a case as to what should be done with the name!

Another difficult point is: What is abrasana? It has not been possible to obtain specimens for examination, and the only definite particulars to hand are contained in an article by Prof. O. Hofmann, Entomologist's Annual, 1873, p. 50, where he describes the female as possessing a long ovipositor. As this long ovipositor only occurs among our British species in subjectana, it follows that abrasana could only be confounded with this last named species. Mr. Meyrick writes, "my specimens (British) are only 2. I see no reason why they should not be unicolorous females of pascuana, and this is probable. Kennel does not figure the male genitalia, and therefore probably had also only females, though he does not explicitly say so."

Mr. Thurnall writes, "With regard to abrasana I never saw but two, and these seemed to me simply small melanic specimens of chrys-

antheana such as I have bred (with the type) and captured."

Barrett, Lep. Brit. Isles, vol. x., p. 271, places it next to subjectana and describes it, "Forewings short and broad, uniform dark olive grey." His figure is a unicolorous olive-brown. He says, "A very rare species in this country, and one of which next to nothing is known."

All other collectors appealed to report that they do not possess specimens, and the probable conclusion is that in Britain no such species exists.

In conclusion, a few remarks on the distinguishing features on the

genitalia as figured may be of use.

In section (a), the CNEPHASIA group, the important feature to note is the position of the blackish extremity of the sacculus. In this group the four species, chrysantheana, octomaculana, communana, and pascuana, are the only ones which will present any difficulty.

In chrysantheana the extremity of the sacculus is seen on the edge of the margin of the valva, well towards the tip. If it appears towards the centre, the specimen must be either communana, pascuana, or

octomaculana.

In communana the edge of the sacculus is very straight, the point turning sharply inwards at the middle. The long narrow wings are a useful guide, and if in addition it be known that the insect was captured at the end of May or in early June, this fact provides further confirmation.

In pascuana the margin of the sacculus is more curved and the extremity emerges at the middle, with rather more of its length free from the valva.

In octomaculana the point appears slightly beyond the middle, but not so near the tip as in chrysantheana. This species possesses, in addition to the albino form, var. albo-octomaculana, a slatey-grey form, which might be confused with chrysantheana, but if the position of the end of the sacculus be kept in mind no difficulty should be experienced. It should also be noted that there is a northern form of conspersana, which bears a striking resemblance to octomaculana, but of course the resemblance does not extend to the genitalia.

Virganreana presents but little difficulty, the small point of the sacculus at the extreme end of the squared ratra determining it at once. When the points are very long and cross each other, the collector

recognises the new species genitalana.

In conspersana and subjectana the point of the sacculus is not as a rule visible, but there is not much chance of confusing these two

species with each other.

In *ictericana*, which might well be confused with the albino forms of other species, the point of the sacculus is large, black, and very low down towards the base of the valva.

In section (b), the Nephodesme group, no difficulty will be found in separating by the wing markings argentana, osseana, and hyemana.

In penziana the sacculus is slightly more robust and rather more

curved than in colguhounana, but the difference is very small.

In sinuana, which is really the only species over which trouble may arise, the long transparent amber coloured sacculus at once separates the male, and the flattened appearance of the floricomus ovipositor the female, from the species in section (a).

In nubilana the twice angled margin of the sacculus is at once

decisive.

It will thus be seen that any two species liable to be mixed up in the wing markings can be separated readily by the genitalia, whereas in those species where the genitalia in *unmounted* examples appear to run rather close, the wing parts lend assistance to their determination.

[If any difficulty is experienced Mr. Pierce will be pleased to examine and report on any series of specimens that may be submitted

to him at "The Elms, Dingle, Liverpool."—H.J.T.]

## A Contribution to the Life-history of Pyrgus proto.

By. W. G. SHELDON, F.E.S.

On May 15th, last year, I found the larvæ of a Hesperid commonly on a species of *Phlomis*, since identified as *P. herba-renti*, at Novorossisk, and later in the month the same larvæ were locally abundant at Sarepta, on this plant.

At the time I presumed they were either *Hesperia cribrellum*, or *H. tessellum*, both of which species are known to feed upon *Phlomis*, but, as they did not pupate until after these were on the wing, I could only

conclude that they would produce some other species.

The larve attained their full growth at the end of May, and then formed a chamber in which to pupate, either by spinning together the edges of a leaf of their food-plant, or by forming with silk a pocket in the gauze of the sleeve in which they were kept. In this chamber they remained unchanged for a period of several weeks, for the majority of them had certainly not pupated on my return to England on July 5th.

The first imago, which proved to be *Pyrqus proto*, appeared on July 13th, and individuals kept on emerging at intervals until September 12th.

So little is known of the earlier stages of many European butterflies that I am not aware if it is usual for the larve of Hesperids to remain after attaining their full size a considerable period without pupating, but it seems difficult to assign a reason for this habit in a species that attains the perfect state in the middle of the summer.

The time of emergence of *P. proto* seems to be much later in South-East Russia than it is in Spain, and the state of the vegetation does not apparently account for this. At Algeeiras, in 1908, I took a specimen in April, and at Albarracin, the altitude of which is about 4,000 feet, the species flies at the end of June and throughout July. It must be borne in mind that Novorossisk is at the sea level, and Sarepta is below it, and at both of these places the vegetation would be far more advanced when *P. proto* emerges than is the case when it is out in its Spanish localities.

I should mention that there can be no doubt as to the identity of my Russian specimens, Mr. Rayward having made preparations of the genitalia of both these and Spanish examples, and finding them identical. *Phlomis herba-venti* is a Spanish as well as a Russian plant.

The following is a rough description made of the larva in the last

instar, with the aid of a lens.

Length when stretched out 22mm.; the head is black and hirsute; the second segment glabrous and flesh-coloured with darker brown markings; the colour of the remainder of the segments appears grey, in consequence of the whole area being thickly covered with white tubercles, which almost hide the dark ground colour. Many of these tubercles had a white spine. Down the centre of the dorsal area runs a thin indistinct black line, caused by the white tubercles being less in number along its length. In the subdorsal area there is a small orange tubercle on each segment. The spiracular region is lighter than the subdorsal; the spiracles are orange coloured outlined with black, and are not conspicuous; above them, but in the spiracular region, is a row of not conspicuous dark markings; the prolegs are amber coloured.

The larva spins together the edges of a leaf of its food-plant, and lives in the chamber so formed during the day, feeding at night.

## Notes on the Swiss Rhopalocera. V.

By the late A. J. FISON.

(Communicated by Miss L. M. Fison.)

Extracts from letters to, and kindly lent by, the Rev. George Wheeler. 1904.

#### 1. SION AND MONTANA.

"Grand Hotel, Sion, May 17th, 1904.

"I have now been here four weeks. On Saturday I got my first Brenthis euphrosyne and the two first Anthocharis simplonia I have seen (high up). Have seen no Pontia daplidice yet, which surprises me. Yesterday, going up to Montana from Grange, I got lots of Melitaea anrelia, above Olon hamlet (say 600 feet above the valley). Glaucopsyche cyllarns was in crowds as everywhere. All the 2 s were of the black or dark brown kind,* and some were very large. Cupido sebrus abounds, but altogether I have not found much yet this season . . . I may

try Fusio and then Davos again, towards the end of June . . .

I hope to be in the Val Bregaglia part of July at least."

[* Is this dark \( \rho \) an intermediate form, approaching ab. lugens, Caradja. "Almost without eye-spots, hindwing upperside \( \frac{\partial}{\partial} \) darker in tint, \( \rho \) very dark." Wheeler, \( Butterflies \) of \( Switzerland.—L. \( M. \) Fison.]

#### 2. Sion.

"Grand Hotel, Sion, May 20th, 1904.

"To-day I went down to your place for Melitaea aurelia and found a good many there. They often seem very dark. I got four  $\mathfrak S$ , and two of them had lighter rows of spots. I was most surprised to find four beautiful, and undoubted, Polyommatus amandus at the same spot, by the thin alder wood, about 40 yards south of the char road. I hunted about for more, but saw none. At a further wood I got three Melitaea dictynna, and two or three Melitaea aurelia. This afternoon I got two more aurelia, about one mile east of Sion, by the high road after crossing the rickety planks of the aqueduct bridge. Nearer south, just below Tourbillon on the north, I was surprised to find a  $\mathfrak S$  Parnassius mnemosyne in a meadow. Near by, on a dry hill, I took about six Melitaea didyma, and twenty-one on Tuesday afternoon (e.g., May 18th) in the same place. I saw also two Melitaea phoebe there.

"This is a capital district for Euchloë cardamines ab. citronia, and

I should think a better place than Charpigny."

### 3. Loweia (Chrysophanus) amphidamas, Esp.

"Grand Hotel, Bex, May 30th, 1904.

"I had to go to Caux this morning, so went on to the spot for Loweia (Chrysophanus) amphidamas, which I reached about 9.45. I caught one at once. Then down by path below last chalet but one on right, to the Torrent, where there were lots (I caught about twenty) till the sun came out more clearly at 11.30, when they all disappeared! At 12 p.m. I prepared to go, when more light clouds brought them out, and at 12.30 I departed with a catch of 26. A few were washed and

some chipped."

[This detail may go to disprove the suggestion in my note on this species Ent. Record, vol. xxvii., p. 65), that amphidamas (together with other "coppers"), is more dependent on sun than some other species for its existence. I am afraid, as each time (three visits—one on May 31st, and two in early June) we did not reach its haunt before 11 a.m., it was a case of the "late bird losing the worm!" and absence of sun, rather than the opposite, which brought the butterflies out, at any rate as regards C. amphidamas, if not other Chrysophanids.—L.M.F.]

#### 4. Faido.

"Hotel Angelo, Faido, June 11th, 1904.

"You will, I think, be interested to know that this morning, when the sun came out for an hour, I at once caught a fine Brenthis thore, on the cool, south side of the torrent, below Faido. Almost my next capture, on the same open bit of grass, was a fine Coenonympha arcania var. insubrica, but I saw no more. Going up the new char road in the same wood, about half or three-quarters of a mile, I reached the only long bit of clearing (just past a waterfall) where I got my B.

thore last July. Several were about, and I had a total of five before rain drove me down. This clearing is a good spot for them no doubt, and it gives room for a chase. B. thore flies in a jerkey way in straight, even lines, a little like the 'White Admiral.' I expect they are to be had in this clearing every June. I also got Erebia medusa, Brenthis euphrosyne, Brenthis selene (one), Brenthis amathusia, Melitaca dictynna (one very good), Chrysophanus rirgaureae, Plebeius argus (aegon), and Pararye aegeria. [Probably ab. intermedia, Tutt.—L.M.F.]

"Yesterday, on the hot north terraces of grass over Faido, when the sun at last came out for ten minutes, I at once caught one Argynnis aglaia and one Argynnis adippe var. cleodoxa, also Parnassins apollo.

"P.S.—On the Weesen marshes I found the best places for Lycaena euphemus were beside the railway (the Filzbach footpath), but for Coenonympha tiphon near its further side, South or South-East of its centre."

### 5. Weesen, etc.

(Although some of the matter in this and succeeding letters is identical with that already published in the Ent. Record (vol. xxvi., pp. 228 and 242), I am communicating it again, in the first place, for its many extra details, and in the second, for the original observant personality which pervades it, and indeed all Mr. Fison's correspondence, entomological or otherwise.—Lilian M. Fison.)

"Hotel Speer, Weesen, June 24th, 1904.

"I have too much to say to-day, for one of my usual post cards.

"First, did I ever write you about the day's hunt I had (May 24th) up from Bramois to Vex, looking for Glaucopsyche (Nomiades) melanops. A very fine day, but scarce a butterfly on all that part, though every second plant in most places was thyme. The thyme, however, was so young I did not recognise it at first, though the scent was very strong. The leaves were not their usual colour, and not a trace of flower or bud, in even the hottest parts. Would it not be very strange if a fly that fed on a plant should appear when it was so little grown? The entire absence of any blues there was remarkable. I got four Erebia erias in the cool bottom of gorge by Hermitage (opposite).

"At Faido I got Brenthis thore at once: five, the first day's hunt (a cool day) in the best clearing south of Faido. A second day the clearing seemed deserted, but I found six more going about at the same level (some 300 feet up). It was a hotter day. I got my twelfth and last thore higher up the forest the day before I left, as I returned from a rather fruitless higher alpine walk. They were in good condition.

a rather fruitless higher alpine walk. They were in good condition. "As to yellow 'Apollos' I only got one with the lowest spot yellow. At Lavorgo there were no fine ? 'Apollos' about. Indeed

it seemed too early for that place.

"Although I soon got a fine Coenonympha areania var. insubrica in the cool, south forest meadows at Faido, I scarcely found another as fine; but still, of the seven to ten I may have, they all have the white band much reduced, and I hope they are true. I was there from the 10th to the 16th (June), when I went to Arth Goldau till last Wednesday (June 25th).

"At Arth-Goldau I got Coenonympha tiphon (eight on 16th), at the end of Lowerzee Lake, but found a better place for them later, close to Arth Goldau. This was just east of it, at the very lowest western

corner of the Rock Slide. In the first, cool woods were lots of Pararge achine, and in the bits of sloping, wet ground, I got, one afternoon, a dozen C. tiphon, and there or in open meadows more west (under rocks), three very fine Lycaena enphemus, though I could see no trace of their food-plant.

"On the Rigi (Staffelhöhe) I was interested in some Coenonympha arcania var. darwiniana, in which the females have a very white, clearly defined fringe, or edging, at apex of underside forewing. It may be that all have more or less of this edging, but I went up a second time to get more (I brought down forty), though I see the edging is only a real creamy-white in the  $\mathfrak P$ s; and got one specimen without any spots

on white band of under wings. This must be rare.

"On Wednesday I came here (Weesen), but I got little that afternoon in the marsh on account of the wind: two Lycaena arcas, six or seven Coenonympha tiphon, and one bad Lycaena euphemus. Yesterday (23rd) I got up to the gorge leading to the Thalalpsee in two and a quarter hours (10 a.m.), just as the sun came in to it. Last year I got my thirty-eight Brenthis there there, on July 16th and 18th, so you may fancy my surprise at finding two B. thore at once, and soon a third. I did not see many besides, but near the top were a few, and I got eight in all—generally in good condition. As I was hoping to find Araschnia levana, this was a little disappointing; and fewer flies of any sort seemed about. However, whilst taking comfort from some cherries at the cow pasture fountain, higher up, I saw a yellow creature alight about eight yards off, and going to see, soon had a fine A. levana, and directly after a second. This was at 11.45 or 12. Of course I hunted, and by 1.30 had ten. I had then worked up to the top of the gully, where I got the last on a thyme flower. Most were settling on a tall, two foot, yellow Senevio (Ragwort), which was as common as the nettles. on which I saw none. One was on a white parsley-like flower, one was on the path, and one I took as it flew. About 2 p.m., as I returned, I began again to catch them near the pass top, but I missed one. I also got a few Brenthis there there. Below, the gorge was then in the shade. My total catch was, thirteen Araschnia levana, eight Brenthis thore, four Parnassius mnemosyne (near top), two Erebia stygne (by fountain at top), and a few minor things.

"Of the lerana, three were damaged. I have no book but yours with me (i.e., Butterflies of Switzerland, by George Wheeler, M.A.), also some notes from Kane. By these I find the upperside (as I read it, of prorsa) should have a good deal of white. My thirteen have no white except two or three roundish spots, like pin-heads, on each wing, upperside, hindwings have also each two small marks, not pure white as the roundish spots of upper wings. Except the black or ground colour all the wings, upperside, are tawny-yellow in their larger markings. This looks like ab. porima. The broad tawny band, hindwing, upperside (from anal angle to apex), has four large black spots on it—three quite round . . . . I caught levana here from June 18th-25th, 1902. They were darker than those taken yesterday. In this thirteen there

must be several 2 s."

#### 6. Sertigthal.

"Davos Platz, July 11th, 1904.

"Have just been up the Sertigthal to the rhododendron end of the pastures (to the Dörfli). I was surprised to find so little, and evidently because it is late. I saw four Parnassius delius and took two; one Parnassius apollo. No sign of Melitaea maturna (var. wolfensbergeri), saw a Colias phicomone, and another 'yellow.' The rhododendron there was past, and nothing about it except a lot of Erebia tyndarus. I did, however, get about nine Erebia eriphyle, though rather old ones. They were on moist banks where Adinostyles and other big-leaved things grow just as in the Dischmathal. Heodes (Chrysophanus) hippothor var. eurybia was pretty good; also Coenonympha satyrion and Loweia (Chrysophanus) dorilis. No good 'blues.' Evidently one should go higher than the Thals. I shall try to do so, and may go on to Pontresine. I hope to go up the Dischmathal to-morrow. Very fine and hot to-day, until a little storm at 3.30."

#### 7. LOCALITIES FOR HETEROPTERUS MORPHEUS, PALLAS, ETC.

"Hotel Steinbok, Pontresina, July 21st, 1904.

"I send a second post-card, in case my first to Fusio misses you. From Reazzino walk towards Locarno. First you go near the Quarries. Then comes a sort of farm with open grass in front. There I saw one or two Heteropterus morpheus in the road. The spring may be 100 yards further. It flows across the road or track, and has tall rushes round. That was where I got four . . . At this hotel are two ardent collectors. They got a Lampides (Raywardia) telicanus two or three days ago, near Celerina. I could see no trace of Erebia plavofasciata yesterday on the Schafberg, though I went far about. At Davos the peasants said everything was three weeks early. I expect butterflies are very irregular. I hope you will have a fine time, but the heat of Bellinzona ought to be an experience to remember."

#### 8. Pontresina.

"July 30th, 1904.

"A Professor, of Berlin, has taken Erebia flavofasciata here this year, from July 1st-15th. Not in my place, but between the first Schafberg Restaurant and Languard Alp ditto, 200 yards from restaurant, in a ravine, and in a further (south) ravine below path, and just before it, on an even steep grass shoulder, with a good guide's path up. This last is above the horizontal path. A friend will ask if he has found Erebia christi; I suppose from your account on a path above Languard Alp Restaurant, which the natives use. The Professor says Erebia nerine is to be had at top of the Laquinthal (under Piz), beyond first or second snow. This must be the north side of the valley, and high. Some collectors say here that hotter weather and more butterflies will come in August, but may we expect Parnassius delius and Parnassius apollo again, which are now very few and old? Also, will Brenthis pales var. arsilache return? It is past now, but I got nine or ten (some very old) along edge of the Celerina woods, towards Pontresina. I have got five, twelve, and ten on three days, but most are old. I hope to go down for two or three nights to Murg, or Weesen. I go to look for Araschnia lerana var. prorsa, but return here. Hoffmann gives as the two snumer forms of Araschnia lerana exactly the two distinct forms I got last year and this. Lang does not agree with my forms at all well, unless it be

^{*} I took twenty P. delius in excellent condition on August 9th, 1914, in less than half an hour in the Suvretta Thal near the cow-hut at the gate way of the path.—H.J.T.

one darker fly. I have two ? Parnassius delius (unless one is Parnassius apollo) with three red spots by discoidal spot. Brenthis ino abounds, though now old, and Brenthis pales. Very few flies of any kind on high parts as near the Tscherva scherva glacier and hut. No Colias palaeno to be seen. I got two old Brenthis thore to-day in Rosegthal at the end in glades. They have been taken there all July. I cannot find Erebia eriphyle there."

#### 9. Araschnia Levana var. Prorsa, L., etc.

"Hotel Speer, Weesen, August 3rd, 1904. "I came down here yesterday to look for var. prorsa in the Murgthal, and have just returned. There was scarcely any sun. Under the wood, on a tiny ridge, where avalanche débris lies about, I got one. Then a second after a long chase, and when the sun came out for a few minutes, four more. More sun produced no more there for a long time, but on going down (150 feet) to the warm, bare path and fountain, I got four at once, making my total ten. I fear all are a little spoilt, and would have been better a week ago. All (except one) have double white spots on centre of upperside forewing, and a long white bar across hindwing, also a few small white spots besides. All the rest upperside is black with a few bright brown dashes. In one (perhaps a ?) the patches are yellow or creamy. I think I have now the three forms portrayed by Hoffmann, for I do not think this is the form of which I took six last year. It is larger, and the white spots are larger, but I will read Hoffmann again when I return to Pontresina. This form flies like small 'White Admirals,' and greatly resembles them. Before leaving Pontresina I heard that the German Professor (who perhaps collects for the Berlin Museum) got fifteen Erebia flavofasciata this year, and his companion forty. The forty were given away to Mr. W. Rothschild, who has been at Campfer. At this rate the persistent 'pot-hunters' will certainly clear the place, which is too easy to get at. Happily there are scores of similar mountains about, with gullies that look likely places for it. I hear of a place called Guarda above Süs, as a great place for plants and insects. Scarcely anything was on the wing to-day, except Dryas paphia and some Erebiae. Rain came on at 2 p.m. Certainly the 'Murgthal-place' for Araschnia levana is easy to reach—one good hour up from Murg. I may go there again to-morrow if fine."

#### 10. STAMPA.

"I came here yesterday after two weeks at Stampa, in the Val Bregaglia. Of course it was too late for much there, but ? 'coppers' were very common, and Chrysophanus (Heodes) rirganreae a brighter yellow tint (uppersides and perhaps undersides too) even than those I got at Pontresina. I have many, but scarcely any from either place are quite fresh. I also got two or three dark and rather interesting Rumicia phlaeas, one with blue ante-marginal spots. I got three ? Loveia (Chrysophanus) alciphron var. gordius, but saw no 3 s, and only two 3 s of H. viryanreae. My great catch at Stampa was three Lampides telicanus. The first two in about an hour, on August 17th. Then last Sunday—the 28th—close to the same spot, another was on the path, and I knocked it over with my hat—as fine a fly as the others. only

minus one tail. You may like to know the spot was about half a mile west of Stampa, beyond the hamlet of Cultura; one found by the rough bridge, and the two just beyond, in clearings of alder scrub. That was a good place too for 'Coppers.' Stampa seems well placed. Promontogno is too hot and shut in, but I should like to hunt earlier in the lovely little Val Bondasca above it. I have come here to look for var. prorsa, but it has turned out too wet. I shall probably stay a few days."

## Notes on breeding Odontopera bidentata.

By W. BOWATER, LIEUT. R.A.M.C.T., F.E.S.

In 1909 I commenced breeding Odontopera bidentata, and have continued till the present time. My main object was to discover the method of the heredity of the melanic form of this species. It was found to be Medelian; the melanic form being a simple dominant, and the type form the recessive. Full details have been recorded.* Since then the experiment has produced still more evidence to confirm this.

I have bred from ova		2300	specimens.
Ditto from larvæ		350	,,
Imagines captured or exchanged	• • •	700	,,
Total in cabinet		3350	

I have now about 650 pupe.

During the experiment over 200 pairings have been made, and 71 families have reached maturity. This does not represent the mortality due to disease. Many families were given away, or exchanged, or

destroyed.

Copious notes on every detail of the life-history have been made, and may on analysis be found useful for publication at a future date. This specially refers to microscopical details. Throughout the experiment scrupulous care has been taken to keep each family separate, for in the study of heredity this is absolutely essential, a sine qua non. Departure from this rule has led at times to some confusion, and apparently conflicting evidence. I would earnestly appeal to all breeders of Lepidoptera to keep families separate, and so labelled that material would be formed from which valuable evidence might be obtained bearing on some of the vexed questions of heredity, especially as to the heredity of small characteristics, anatomical, physiological, and even psychological. The following details are observations made on the specimens used in the experiment and on them only.

1. Pairing.—This usually occurs soon after emergence, and in several cases even before the wings were quite dry. In some cases, however, 24 hours elapsed before copulation. In three cases fruitful pairing occurred between 2 s emerged 4-7 days and fresh 3 s. Copulation almost invariably occurs between 8 p.m. and 11 p.m. The ? in almost every case holding on to the lid of the box or cage, and the 3 hanging pendulous without foothold. Separation occurs in the early hours of the morning. In one case only copulation began at

^{* 1.} Trans. Brit. Assoc., 1913.

^{2.} Journal of Genetics, vol. iii., no. 4, April 1914, pp. 299-315.

10 a.m. and ended at 3 p.m. Fruitful pairings have frequently occurred in temperatures of 40°F.-50°F.; and in several cases at 33°F.

2. Ovulation.—Unimpregnated  $\mathfrak{P}$  s almost invariably deposit ova 5-12 days after emergence. An impregnated  $\mathfrak{P}$  usually deposits about 100 ova during the night following impregnation, and repeats the process within the next 24 hours. A large chip pill box was used for ovulation, and most  $\mathfrak{P}$  s were satisfied to lay their ova on its sides or lid, but some preferred the small twigs which were always placed in the box. The  $\mathfrak{P}$  s were usually killed as soon as 100 ova were laid, in order to retain them in good condition, but if allowed to live in some cases 400-500 ova were deposited, and in one case 585 were noted. In gauze cages, the gauze was commonly used as a place for oviposition. Glass also often served.

Both sexes accepted moistened lump sugar as refreshment in the intervals of their marital duties.

- 3. Ora.—Pale yellow when laid; if fertile, becoming bronze in 3-8 days, according to temperature. Hatching occurs in 15-34 days, according to temperature. In ordinary April and May weather 22 days. The bronze colour deepens and becomes dusky 36-24 hours before hatching. Ova were kept in glass topped tin boxes. Hatching is usually spread over 2-5 days. Introduction of even a single leaf before hatching is fatal to the ova, presumably this is due to the moisture.
- 4. Larra on hatching take no further notice of the egg-shell, but are very active, and walk round ceaselessly till they find a pabulum. Of one batch, which after hatching was forgotten for 72 hours, nearly all were found to be alive. The larvæ were kept in glass topped tin boxes for the first few days, or even few weeks, of their existence. If direct sunlight is prevented from falling on the boxes the mortality is extremely low. Throughout the experiment, of all the larvæ which hatched less than 5% died from disease.
- 5. Length of larval life.—In the single case where forcing was tried, hatching to cocoon formation occupied 41-54 days. Under apparently natural conditions the shortest was May 3rd-June 20th.

Much depends on the foodplant.

6. Food-plant.—Privet, especially the evergreen variety, and apple, are the best food-plants. They promote more rapid growth in the larvæ than ivy, pear. plum, sallow, birch, hawthorn, Prinus pissardii, willow, poplar, travellers' joy, which also form useful food-plants. Broom produced but very slow growth, but all lived.

7. Cages.—In addition to

- (a) Ordinary breeding cages, epecially that special variety which each collector has evolved for his own use, and secretly considers the best on earth.
- (b) Biscuit tins, half-size, were found to be most useful, giving a minimum of trouble, occupying so little space, and cheap, and above all healthy, as might hardly be expected, and, moreover, repeated

experiment proved that larvæ fed up much more rapidly in these tins

than in any other form of breeding cage.

The floor of the tin is covered with one inch of moss fibre, slightly damp, with a piece of paper on top, leaving a margin, and the twigs of

privet or apple laid on top.

Although it is necessary to open them at least every 48 hours, one or two minutes suffices to change the food, and the mortality was not above 3%, including some weak families. Ten to 35 larve pupated in each tin, and in many cases mortality was nil, the larvæ being put in when half grown.

- (c) Sleeving.—Ova, or very young larvæ, were sleeved on privet and apple. Mortality less than 2%, except from parasites. As rate of growth in the various families and within a family is so variable, frequent watching is necessary in order to remove full fed larvæ to
- material suitable for pupation.
- 8. Colour of Larve.—It was interesting to note the variation of colour due to environment, as proved in Professor Poulton's classical experiments. The red of Prunus pissardii twigs, the beautiful green of apple shoots, the gray brown or black of apple twigs, and the brown of moss fibre, were all faithfully imitated.
- 9. Habits of Larva.—They feed only at night, eating voraciously and moving actively. Characteristic "stick" habits by day. Not only a general feeder, but enjoys a mixed diet, or after feeding for weeks on one food-plant readily changes to another. Occasionally cannibalism has been suspected, but never actually observed, and certainly does not occur if food supply is plentiful. It is very probable that various characteristics and habits of larvæ run in families, and efforts have been made to collect evidence on this point.
- 10. Pupation.—Larvæ prefer moss fibre to any thing else in my experience. It should be sieved to remove dust and very fine particles. If cokernut fibre is used many imagines are strangled and fail to emerge from cocoons. Although dead leaves always littered the cage floor, larvæ used them for pupation in only about ten out of over 2500 observed cases.
- 11. Cocoon is made of granules of moss fibre, and is lined by a loose meshed network of strong, thick strands of silk. The cocoons are usually collected in bunches, but I have never found two pupse in one cocoon. If a larva has no available material for cocoon, it spins a slight net of fine closely meshed silk. If left late in a sleeve, frass is utilised in forming the cocoon.
- 12. Pupa.—Larval skin is shed in 3-5 days after the cocoon is formed. The pupa moves if touched at any time throughout the winter. If kept indoors, even in a non-heated room, emergence of the imago occurs frequently in December, January, and February, especially of the melanic form. In this observation I am supported by several entomological friends. Curiously enough
  - 13. Forcing during the autumn does not hasten the emergence.

Pupæ have been kept at 65-78° F. for ten weeks in autumn and they emerged no sooner than the rest of the family left in a cold room.

14. Emergence has been repeatedly noted in January and February when the thermometer in the cage stood at 33° F. In one instance only a pupa forced its way half out of its cocoon five days before the imago emerged. Normally dehiscence occurs inside the cocoon. In cases where exit is impossible the ? deposits ova in the cocoon.

Emergence almost always occurs between 7 and 11 p.m. Growth of wings occupies 15-20 minutes, and the moths are able to retain their

hold on vertical glass.

15. Habits of imagines.—During day very sluggish, resting with the wings flat, with the upper hiding the lower, hiding in corners, and if possible touching a leaf, label, or another moth.

In the evening and during the night they rest with wings upright

over the back.

Females can be handled with impunity, and lose condition but little if allowed to live a week in cage or pill-box.

16. Variation.—When freshly emerged some of the imagines are surprisingly handsome. In the type form, variation extends from the palest yellow, buff, orange, fawn, grey, golden brown, up to dark brown with heavier markings.

Within the *melanic* form variation occurs in the intensity, and exact tint of the blackness, and in some cases a large central patch of brown occurs on the forewings, and at times this is sharply defined

and quite light in colour.

The melanic form is, however, quite sharply defined from the darkest of the type forms by the fact that in every melanic the abdomen and legs are black, and never is this so in the type. Thus even cripples can be distinguished. The thoracic hairs in the melanic are often lighter than in the type.

A non-entomological eye can distinguish between the two forms in almost every case; and not one of all my specimens could be called intermediate, thus differing from A. betularia, S. lubricipeda, A.

nebulosa, etc.

Some specimens are scantily-scaled and these are often rather bandsome.

Males are on the average slightly smaller and darker than the corresponding females. This applies to all forms and varieties.

In a "Journal of Variation," I feel that more prominence should be given to this part of the subject, and trust for an opportunity to dilate on this when I see my specimens again.

- 17. Gynandromorphism.—Only one specimen showed signs of this, the left half being apparently  $\beta$ , and the right half  $\mathfrak{P}$ . I hope to publish microscopical details later.
  - 18. Inbreeding was sustained well as shown in diagrams.
- 19. Sanitation.—I am assured that the frequent sterilisation by boiling of cages and boxes and sleeves was essential in this breeding

experiment; and lack of this precaution is a common cause of failure in similar ventures.

20. Parasites.—Of these (i.) Borkhausenia pseudospretella was the most harmful. In spite of carefully baking the mossfibre used, loss was caused each year by the larvæ of this moth eating the bidentata pupæ. The only consolation was afforded by remarkable cases of assembling displayed by the parasite.

(ii.) Four cases of Ichneumon appeared.

(iii.) Of the coleoptera a cannibal species slaughtered fifteen larvæ

and pupæ in two sleeves.

(iv.) Earwiys are under my suspicion, but several prolonged attempts to persuade them when under observation, to devour larvæ or soft pupæ failed.

(v.) Mice accounted for 300 pupe in 1912-13, but fortunately did

not break the generations.

21. Labelling.—Every cage or box was labelled inside and out. The orthodox method was used; thus:—

- 22. Double Brood.—Family 13·20 consists of about 100 members, which fed as larve during May, June, July, 1913, the last to pupate going down on July 31st. Although kept in a cold room, a few imagines emerged in December, and on January 8th. 1914, two emerged and paired. The resultant ova, Family 14·2, were divided into:—
- (i.) Batch A, kept in a room at 45°F-55°F. They hatched on February 1st, and the larvæ were incubated at 65°F. They pupated (about 50) from March 12th-28th. Pupæ were forced in a friend's greenhouse and imagines emerged in July. Two paired July 20th and the resultant ova, 15·1, hatched August 10th. My wife, although absolutely inexperienced in entomology, rose to the occasion, and took charge of these (and of all my other specimens) from this date. The larvæ were kept in an ordinary room, fed on apple and privet and about 50 safely pupated September 12th-October 3rd, thus completing the double brood.

(ii.) Batch B ova of 14.2 were left in the cold room. They did not hatch till February 22nd, the temperature then being 44°F. During the next few weeks they lived in 42°F. 53°F. On April 2nd they were sleeved in the garden, survived several nights frosts and

pupated out of doors in the first twelve days of May.

Although still left out of doors, some of the imagines appeared in the first three weeks in September. Two emerged October 9th and paired. Resultant ova, 15·2, brought indoors, and kept in a living room. They hatched November 6th, and fed on evergreen privet, pupated in the last week of January and first week of February, 1915.

Thus bidentata can with care, be made to withstand various dis-

advantages of parentage and environment.

23. Breeding black forms.—Finally, with regard to the statement

heard at times that the melanic form of bidentata does not "breed true," the explanation is that in this species blackness is dominant, not recessive as in A. grossulariata.

A recessive character is easy to get pure and "breed true," and a dominant character is difficult. Our domestic sheep forms a good

example:—whiteness is recessive, and blackness dominant.

To put it in a practical way for the benefit of those entomologists (probably still numerous) who have not had opportunity or inclination to study Mendelism:—

All Type bidentata (whether their parents were both type, one type and one black, or both black) are exactly alike as regards their powers

of transmitting colour to their offspring.

Melanic specimens all *look exactly alike*, but really consist of two sorts, differing in powers of transmitting colour:—

A. Pure melanic. (homozygous).
B. Impure melanic. (heterozygous).
Therefore,

1. Type × type always produces offspring all types.

2. Type × melanic produces either

i. offspring all melanic.

or ii. offspring 50% melanic, 50% type.

3. Melanic × melanic produces either

i. offspring all melanic.

ii. offspring 75% melanic, 25% type.

In 2 i. the melanic parent must have been A.

,, 2 ii. ,, ,, ,, ,, ,, ,, B. The melanic specimens of families  ${\bf 2}$  i. and  ${\bf 2}$  ii. are all B.

In 3 i. although all look alike, there are two possibilities:—

If both parents were A, the offspring are all A.

If one parent was A, and one B, then the offspring are 50% A and 50% B (although they all look alike).

In 3 ii. the parents must have been both B. Of the melanic

specimens (75%),  $\frac{1}{3}$  are A, and  $\frac{2}{3}$  B.

Thus to get a pure black strain is very difficult, because A cannot be distinguished by the eye from B, but attention to the above points will help.

A common experience is as follows:—A black specimen is taken and deposits ova. Larvæ carefully reared, and the following year imagines appear, either 50% or all black. In either case, two blacks are chosen; paired and larvæ reared. Next year imagines are 75% black and 25% type.

(The type are really pure although parents black, so time spent in

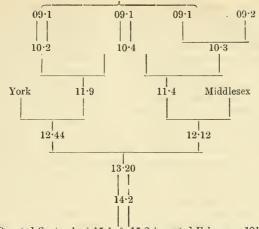
breeding from them is wasted).

Two black are chosen, and here is the difficulty. There are twice as many B's as A's, so the chances of picking two A's is less than the chance of picking A and B, or two B's, and thus often to the chagrin of the breeder aiming at a "pure," strain, types again appear.

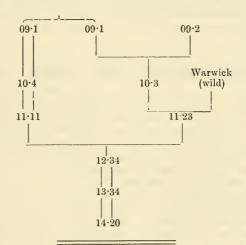
Still, as I have shown, definite rules govern the heredity of melanism,

and mongrelisation is only apparent not real.

[I wish to acknowledge with thanks the courtesy of Messrs. Mosely of Birmingham, G. T. Porritt, Parkin, and A. Horne, who have given me valuable advice and helped in other ways.]



(Pupated September) 15.1 & 15.2 (pupated February, 1915).



## SCIENTIFIC NOTES AND OBSERVATIONS.

HIBERNATION OF VESPA VULGARIS.—Having a warm corner in my heart for the British Vespidae I was particularly interested in Miss Fison's note on p.87 under the above heading. It is not a rare thing I believe to find queen wasps hibernating behind pictures, but they are usually attached to the picture, not to the wall. It is not clear how the thread referred to secured the wasp to the wall; if it were in the form of a loop over the thorax or abdomen in the manner of the thread in the case of the pupe of Pierid and other butterflies, then I should think it was spun by a spider after the wasp had become thoroughly torpid. Since queen wasps fold up their legs and wings beneath the abdomen and thorax and cling to the support only by their jaws, the specimen in question must have gripped a small irregularity in the plaster of the wall by that means, or possibly, a

strand of spider's web already there. If Miss Fison can elicit more definite information on these points it would be useful.—C. Nicholson

(F.E.S.), 35, The Avenue, Hale End, Chingford, Essex.

THAUMATOPAEA PITYOCAMPA.—The larvæ Miss Fison saw (Ent. Rec., xxvii., p. 86) in the road at Pallanza, on February 11th, were certainly not processionea but pityocampa. The larve of the latter hatch in autumn, make their great nests in the pine trees, and are full-fed in early spring, they then leave the trees and "process" across country roads or anywhere, to find a place in which to spin their cocoons and pupate. They enter some cavity together and spin their cocoons in a mass. They do "process" on the trees from their nests to the feeding places, but only leave the trees and march on the ground when ready to pupate. Pityocampa feeds on pines, and in its southern habitats feeds all the winter. On the other hand processionea feeds on deciduous trees, usually oaks. The small larvæ may be found, in beautifully radiating groups, on oak leaves, not very long after these have fully expanded in the spring, but they still have nearly all their growth and feeding to do, and are not full-fed till well on in the summer. life histories of both species are well-known, and the discrimination between them when found as larvæ is easy, but the facts do not seem to be familiar to everyone.—T. A. Chapman (M.D.), Betula, Reigate. April, 1915.

## **QURRENT NOTES AND SHORT NOTICES.**

The earnest sympathies of all our readers will go out to Professor E. B. Poulton, F.R.S., of the Hope Museum, for the loss of his son, Lieutenant R. W. Poulton-Palmer, killed in action in France. Lieutenant Poulton took the name of Palmer two years ago when he inherited the fortune of his uncle, a director of the great biscuit factory at Reading. He was a well known athlete and had taken part in many first-class and international matches.

Those entomologists who were present at the South London Entomological Society to hear Dr. Dixey's paper on "Seasonal Dimorphism" had a treat. It was an admirable and lucid statement of the phenomena by the author at his best, and was fully illustrated by diagrams and a valuable series of appropriate slides. Those members of the Society who were unable to be present will enjoy

reading this paper when it is printed.

The word when in the last paragraph calls attention to a grievance which not only authors of papers, read at our various societies, have, but which is also shared by the audience, the members unfortunately unable to be present, and often by science itself. An extreme instance may be quoted. On February 12th, 1914, our colleague, the Rev. G. Wheeler, read a very valuable paper on the "Genus Melitaea" at a London Society, and yet owing to the customary routine this paper has not yet been published.

This is in no way intended to signalise any individual society; similar delays occur in most of them. A paper read early in the official year rarely gets printed until well over twelve months after, and it may, by that time, be somewhat out of date. Having appreciated the delay, and its effects on the progress of our knowledge, how can it be avoided? There seem but two ways to get over the difficulty, either the societies

must have more frequent issues of their proceedings, a much more costly arrangement than the present annual issue, or the magazines must step in and publish the papers, when the societies would lose the advertisement and credit. Of course the whole difficulty is one of pounds, shillings and pence. No society can exist unless the subscription is very moderate, and every society must proclaim its work to the world and advertise itself by a publication. This latter is costly and usually falls largely on the shoulders of a few more enthusiastic members. There is always the necessity for the most rigid economy in the finances of a society which would be quite impossible did publication of papers occur every few months. Is it worth the while for these smaller societies to cripple their resource and so restrict their usefulness by struggling to publish papers? Some papers in these lesser publications are naturally very limited in their application and perhaps, from a scientific point of view, not worth printing, while others are of more or less permanent value and their restricted circulation is not only a loss to the advancement of science if so published, but, even may be completely hidden away, as was for so many years the now famous paper of Mendel on Heredity. Every new serial publication adds to the difficulty of the future student; at the present time it is well nigh impossible for any individual worker by himself to make a complete search in a question which for the time being he is dealing with. On the other hand each member of a society feels that he is hardly dealt with if he has nothing in return for his subscription, nothing permanent to remind him of his many pleasant hours of social concourse with his fellow enthusiasts. Such are some of the points in a difficulty that one sees.

Professor Forel has recently described three new species of ant from South Africa, under the following names, Tetramorium joffrei, T.

frenchi, and T. popovici.—H.D.

The Growth and Organization of Applied Entomology in the United States is the title of a Reprint from the Journal of Economic Entomology, by P. J. Parrott. He shows that the great feature of the past quarter of a century was "the rise of the entomological expert with his official connections, and of organizations of workers engaged in the promotion of agriculture" and that this movement " has exerted a profound influence on the aims and success of this branch of science" in the country. The development of Entomology, he shows, to be largely utilitarian, induced by the continued application to legislatures for assistance in coping with the overwhelming insect depredations and by the inability of individuals to deal unaided with the trouble. The history of state-aid in applied Entomology in the States is sketched, and reference is made to such eminent pioneers as Harris, Fitch and and Riley. The Budget for 1913-14 provided no less than 752,210 dollars for this purpose in connection with agriculture. The author concludes with a plea for greater opportunities for experimental work, which the insistent demands of present arrangements in economic work do not permit to be sufficiently undertaken.

For many years we have been accustomed to go through the catalogues of second-hand books, not only with the object of finding a bargain or a desideratum, but for the interesting comments of the compiler on a large number of items. These remarks are not only often very instructive from a historical, literary and scientific point of

view, but they are frequently most amusing and even witty in their comment. The war even has had an effect upon the fertile brains of these would be instructors, for from a catalogue recently to hand we cull the following caustic items. "Becker (Leon) Les Arachnides de Belgique." . . . "Since the publication of the above work Belgium has been overrun by the enormous migration of a gigantic blood-sucking spider, Kulturia vastatrix, Treits., with falces of a noxiousness hitherto unknown to naturalists. Although in their new habitat these Arachnida have approximated to the trap-door spiders. their expulsion and extermination is only a matter of time." "Bene-DEN (PIERRE JOSEPH), LOUVAIN, Animal Parasites and Messmates.".... "Like Belgium in general, Louvain in particular is suffering from the unexpected arrival of vermin of a very low type, which are unlikely to survive the freshening winds of spring." "Lambillion (L. J. L.) Histoire Naturelle de Moeurs de tous les Papillons de Belgique." "The complete devastation by the savages of so much of the low-lying area of Belgium may very possibly lead to some of the species here described becoming extinct." "HAECKEL (ERNST), Report of the Siphoniphorae, etc." . . . . "This is the man who, with Dr. Eucken, put forth, with his tongue in his cheek, the lying statement, that the French invaded Belgium before his own countrymen did." And so

Among the more interesting matter in the January magazines are the following. The Canadian Entomologist:—(1) F. H. Wolley Dod continues his valuable contribution to our knowledge of the Lepidoptera of Alberta; he deals in this chapter with further Noctuid species. (2) L. W. Swett continues his Revision of the genus Hydriomena; the group with long palpi is under consideration at present. (3) The first of what purports to be a very useful series of articles on the educational side, entitled "Popular and Economic Entomology," is published. This instalment deals with "Some Inhabitants of a Land Plain in June," using as a text the locality Aweme, Manitoba, and the date June 20th. The Scottish Naturalist:—(1) Frank Balfour Browne contributes the first portion of an account of the Aquatic Coleoptera of the Outer Hebrides, dealing with the general characteristics and limits of the area and methods of collection, record and study involved. The Entomologist's Monthly Magazine: -(1) F. N. Pierce and the Rev. J. W. Metcalfe describe three new species of Tortricidae, discovered in working through the genitalia of the British representatives of the group. The species are Cnephasia genitalana, hitherto stated to have been mixed in collections and confused with C. conspersana. Of the latter species the authors also announce and describe an aberration, viz., ab. albo-conspersana, and of Unephasia octomaculana they also describe a new aberration, ab. albo-octomaculana, both aberrations are forms which might possibly be confounded with the new species. (2) Poecilochroma pomedaxana, described from series bred by Mr. E. Studd, at Oxton, Devon, and hitherto considered as a form of P. profundana upon the authority of Mr. E. R. Bankes. has been bred for a number of years from old apple trees. (3) Lipoptycha aeratana has been confused hitherto with series of Dicrorampha (Lipoptycha) plumbana and D. saturnana, or even among series of D. tanaceti. The Entomologist:—(1) J. W. Harrison contributes an article "On the Hybrids of the genus Oporabia with some notes on its 'Microgenes.'" (2) L. B. Prout announces and describes the following new melanic aberrations of species of *Enpithecia*. E. nanata ab. oliveri, bred by Mr. Oliver from Warwickshire; E. lariciata ab. nigra, captured in the same district by Mr. Oliver; E. innotata ab. microlor, bred second-brood small dark form from Durham. (3) Notes on the Larval and Pupal Stages in some of the Sesiidae = Aegeriidae, by Col. R. H.

Rattray.

The following are the more important articles in the Entomological News for the latter half of 1914. (1) An account of the life and work of "J. Brackenridge Clemens," who, it will be remembered, was the friend and correspondent of Stainton, and who, with the latter, took considerable interest in the Micro-lepidoptera of the United States. Clemens was in fact the "father" of the study of the smaller moths in America. (2) An account of "Butterfly-collecting in Mojave County, Arizona," by J. R. Haskins, of Los Angeles, describes the district in an interesting manner and gives notes on the chief species and forms found, including Pyrameis cardui, Synchloë californica, Pieris protodice, Libythea bachmanni, Colias eurytheme, Papilio asterias, etc. (3) "The origin of Oligotropism in Bees," by John H. Lovell. (4) Dr. Phillip P. Calvert continues his "Studies on Costa Rica Odonata," dealing with the "Waterfall Dwellers" in this contribution. There is one plate. (5) Messrs. E. M. Swainson and Henry Skinner describe a larva of the rare Jamaican Papilio, P. homevus, and figure it. (6) John Werner Franzen gives a list, with notes, on "Minesota Butterflies," mainly from his own observations. (7) Harry B. Weiss goes into the subject of the introduction and spread of injurious insects, in an article entitled "Insects found on Nursery Stock imported into New Jersey during 1913." More than half the imported stock was from Belgium, and the rest largely from Holland. A list of the insects met with is given with the host plant of each species. (8) John H. Lovell enters into a discussion on the question "Why do Honey bees discriminate against black?" He gives the curious facts that, "Of a flock of twelve chickens running in a bee-yard seven black ones were stung to death, while five light coloured ones escaped uninjured. A white dog ran among the bee-hives without attracting much attention, while at the same time a black dog was furiously assailed by the bees." "A black and white cow, tethered about forty feet from an apiary, was one afternoon attacked and badly stung by bees. On examination it was found that the black spots had five or six stings to one on the white." "A black felt hat will be literally decorated with stings, while a gray hat will not get a single sting." (9) B. W. Evermann reports from the San Joaquin Valley, California, on the abundance of Pyrameis cardui in April, 1914. He says, "As we drove through the fields of yellow mustard these beautiful butterflies flew up in front and on either side of us literally by their thousands. There must have been millions of them, they were everywhere in the fields." (10) H. A. Allard describes a series of experiments he has made on the subject of "Locust Stridulations."

## SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.—February 3rd, 1915.—

ELECTION OF FELLOW.—Mr. Adam Charles Smith, of Horton, Mornington Road, Woodford Green. Nomination of Vice-Presidents.—The President announced that he had appointed Mr. G. T. Bethune-Baker, Mr. E. Ernest Green, and Dr. G. B. Longstaff to act as Vice-Presidents for the current session. South European Rhopalocera.—Mr. E. B. Ashby exhibited some Ruralids from Southern Europe, including specimens from Digne, le Vernet, and La Granja. A GIANT GLOW-WORM.—Mr. E. E. Green exhibited specimens of the giant glow-worm of Ceylon (Lamprophorus tenebrosus), and its male—a large firefly. An INGENIOUS DEVICE.—Dr. H. Eltringham exhibited an instrument made to his instructions by the Cambridge Scientific Instrument Company, for cutting paraffin blocks perfectly square preparatory to placing them on the microtome. The Life-history of Agrotis Lucernea.—Mr. Lupton communicated notes on this species at Torquay. The Habits OF THE AUSTRALIAN BUPRESTID "FIRE-BEETLE," MERIMNA ATRAEA, LAP. ET Gory.—Prof. Poulton exhibited specimens of the above-named beetle and read notes. The Australian Buprestid Beetles Stigmodera con-SPICILLATA, WHITE, AND S. CYANURA, HOPE, PROVED TO BE FEMALE AND MALE OF THE SAME SPECIES.—Prof. Poulton exhibited the male and female of S. conspicillata. The two sexes had been bred by Mr. H. M. Giles from the same food-plant, Melaleuca sp., and had also been captured by him in coitû. The African ant Megaponera foetens, F., and its raids UPON TERMITES.—Prof. Poulton said that he had recently received notes upon the habits of this ant from three different observers. Butter-FLIES FROM BIAK.—Mr. Talbot exhibited on behalf of Mr. J. Joicey a number of new forms of Lepidoptera from Biak, the largest of the Schouten Islands to the north of New Guinea. The following paper was read:—"New Butterflies and a Moth from Biak," by J. J. Joicey, F.L.S., F.E.S., and A. Noakes, F.E.S.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY. February 11th.—New members.—Messrs. E. J. Bunnett, M.A., of Forest Hill, and Gordon Fryer, of Twickenham, were elected members. NEW RECORDS RE PYRAMEIS ATALANTA.—Mr. L. W. Newman communicated a long record of the results of the October pairing of Pyrameis atalanta, and of his unsuccessful attempt to keep the fertile females alive through the winter. He felt conscious that we were almost entirely dependent upon immigration for our supply of this species. Mr. Frohawk said that P. atalanta was on the wing all the winter in suitable weather in the Scilly Isles. Mr. Barrett said that it occurred similarly in Sicily all the winter. Cocoon STRUCTURE.—Mr. R. Adkin exhibited photographs, highly magnified, of the silken thread construction of the cocoons of Saturnia pavonia, Anthrocera filipendulae and Dicranura vinula. Lantern slides.—Mr. Frohawk showed a large number of lantern slides of birds, and gave an address incorporating his own observations on the Scilly Isles.

Correction.—An unpardonable error has crept into the last number of the magazine for which the author of the paper is not responsible. On page 79 Anthocharis belia var. bellezina should of course be Anthocharis tagis var. bellezina.—H.J.T.

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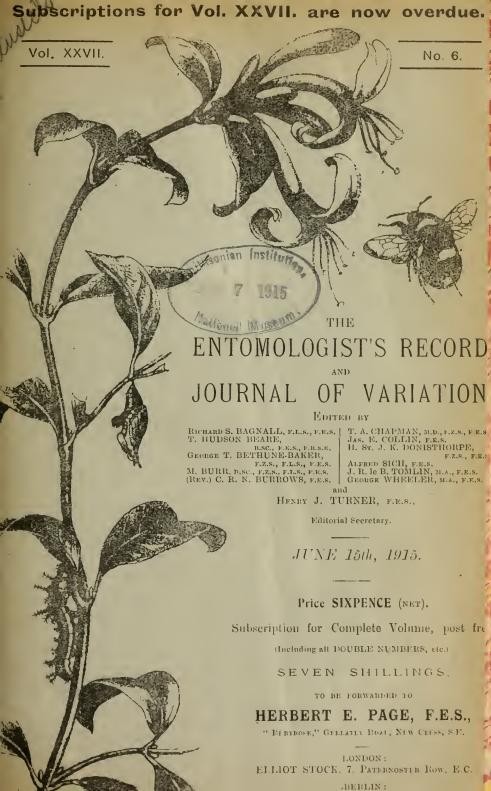
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The TILES of some of the articles are as follows:—Notes on Butterfly Pupe, with some remarks on the Phylogenesis of the Rhopalocera."—Dr. T. A. Chapman, F.E.S., "Phytophagic Species."—Prof. A. Radeliffe Grote, M.A. "Varieties and aberrations of Nocture from Doncaster."—H. H. Crobett, M.R.C.S. "The frenulum of the British species of Smerinthus."—G. C. Griffiths, F.Z.S., F.E.S. "Endryas ste-johannis,"—A. Radeliffe Grote, M.A. "Parthenogenesis or Agamogenesis."—J. W. Tutt, F.E.S. "Larve."—Rev. G. M. A. Hewitt, M.A. "Parthenogenesis or Agamogenesis."—J. W. Tutt, F.E.S. "Generic Names in the Noctuide."—Pror. A. R. Grote, M.A. "Pupa hunting in October."—J. W. Tutt, F.E.S. "Polygamy and Polyandry in Moths." "The nature of certain insect colours."—W.S. Riding, M.D., R. Freer, M.B., J. W. Tutt, F.E.S., Rev. C. R. N. Burrows, J. Anderson, Jun. "The Lepidoptera of Swansea."—Major R. B. Robertson. "Caradrina ambigua in the Isle of Wight."—A. J. Hodges. "The insects of Bourg St. Manrice."—J. W. Tutt, F.E.S. "Orrhodia erythrocephala ab. glabra from Devonshire and comparison with O. vaccinii."—Dr. W. S. Riding, F.E.S. "Notes on Caradrina ambigua and C. superstes."—J. W. Tutt, F.E.S. "Entomology and Entomologists, being the Annual Address to the City of London Entom. Society." Notes on Aphomia sociella" (with plate).—W. P. Blackburne Maze, F.E.S. "Collecting Noctuidee by Lake Eric."—A. Radeliffe Grote, M.A. "Coleoptera at Ipswich."—Claude Morley, F.E.S. "Notes on Bombus visurgiae." "Synonymic Notes on Acidalia humilata and A. dilutaria."—L. B. Prout, F.E.S. "The Lepidoptera of Grésy-sur-Aix."—J. W. Tutt, F.E.S. "Apatura iris."—Rev. G. M. A. Hewett' "Scheme of Classification of the Rhopalocera founded on the structure of the Pupe."—T. A. Chapman, M.D., F.E.S. "Glimpses of American Entomology."—J. W. Tutt, F.E.S. "The Genus Smerinthus."—A. Baact. "Variation consolidered biologically: Some notes suggested by the Romanes Lecture of 1891."—J. W. Tutt, F.E.S. "The British representaives of the Genus Caradrina."—J. W. Tutt, F.E.S. "H are quite unique.

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#### Pajares.

#### By P. H. MUSCHAMP, F.E.S.

On July 13th, 1914, the proprietor of The Record and myself stepped out of the train at the ltttle station of Pajares after a long but rather amusing journey down from Paris. Pajares is a village in the Asturian Cantabrians, on the watershed between the provinces of Leon and Oviedo; it is 1364 metres above the sea level. This place is known to entomologists as being the haunt of Erebia palarica, the largest and one of the most beautiful of its genus, a species found by Dr. Chapman in 1904, and not retaken since then. The mean expanse of wing of those he took is between 59mm. and 60mm., a 10mm. greater expanse than E. evias, the giant among Swiss Erebias. Its upper surface strongly resembles that of evias, but the band on the underside of its hindwings is abundantly distinct from those of either erias or stygne: its male genitalia are very close indeed to the genitalia of stygne, although the shoulder of the clasp is bolder in the two specimens which I have sacrificed to the microscope. The ova would seem to be quite distinct according to Mr. Powell's notes on material received from Dr. Chapman. Wishing to be in a position to examine the genitalia of a number of palarica, and unsatisfied with those which Dr. Chapman so generously sent me 10 years ago, I was right glad to join Mr. Page in a palarica hunt. Right glad were we two to have been able to get away from our homes so early in the summer, and it was with hearts as joyous as the sun was bright that we reached the station of Pajares an hour or two after sunrise. The village of Pajares was invisible from the station, but we had Dr. Chapman's letter with us which directed us to a "tienda" or village shop, where we were to find rooms over a pigsty! Inquiries of the stationmaster elicited no information respecting the proprietor of said pigsty, but a pale-faced consumptive youth soon put us on what we supposed to be the right track. He led us to the village, showed us the "tienda" in which he himself was a guest, and we took a room over the pigsty facing the "tienda"—the dépendance of this "hotel!" We have since heard from Dr. Chapman that we should have stopped one station before getting to Pajares and sampled the pigsties there. It would seem then to be a speciality of inns in this neighbourhood to have their guestchambers in close proximity to the "habillés de soie," a compliment I was to learn to "properly appreciate" a few days later when our unshutable door was pushed open in the middle of the night and two "gentlemen" entered the room, and with many grunts began to investigate my friend's valise, and, as my shouts neither disturbed the grunter's activity nor my friend's slumbers, I was obliged to tumble out of bed and drive them downstairs to their own flat; we had paid for ours and I wanted no other sleeping companion than Mr. Page, besides, their conduct in nosing about his valise was absolutely indiscreetwell, after all they were Spanish pigs, and discretion is a flower that does not often grow in Spain. It is just possible that these useful animals considered that we were not paying enough for our board and thus had no right to our lodging. If this were so, there was some excuse for them. In addition to our share of the sty we were fed and excellently fed, better, I expect, than even our neighbours JUNE 15TH, 1915.

themselves were; for us many an innocent trout gave up its little life, for us were slain fatted lambs—we were even invited to view the slaying—for us came beef from afar, for us one of our dear neighbours uttered its last squeal, for us many and mysterious vegetables were culled; fruit indeed, was very rare, but after each meal we were regaled with black coffee and our hosts pet liqueur - and for this we were expected to pay a sum equivalent to 4s. a day. It was hardly ruinous. Our host fed-I cannot say ate-with us, his wife and daughters served us with the viands that themselves had erst prepared. The fair daughters of the house did our washing and deemed the labour to be one of pure love; why not? water is plentiful and women's work too cheap to be taken into consideration! air was glorious, the view fine-only-a very big only-we were too late for palarica—much too late, as not even one ragged specimen was taken! Oh reader, follow our example, learn the lingo in your leisure moments, master the host of irregular verbs and the subjunctive of the regular verb with its three imperfects and its future and go to Pajares, but go there at least a fortnight earlier than we did! The only Erebias we took at Pajares were a few worn erias, some fresh stygne and a half-a-dozen very fine epiphron var. pyrenaica, much

larger than those from the Pyrenees.

At Pajares we found few other butterflies worthy of note except L. argus var. casaicus, which we were destined to find more abundantly at Brañuelas. Casaicus & varies principally in size, the largest of a series of 500 which I have, has an expanse of 31½mm., and the smallest rather less than 20mm., the orange-peacock spots on upperside of hindwings varying in number from five to zero, about 50 per cent. of mine have these orange spots, but this is far too large a proportion, as I naturally selected my specimens. The 2 varies more than the 3 in size, breadth of orange and of white bands, and in the eye-spots of undersides. Among my underside abs. are retrosagittata, retrojuncta, sagittata, costa-juncta, discoelongata, and unipuncta. I believe that the first mentioned has not yet been noted among the argus, though fairly common in other "blues," and of the last mentioned a single specimen is cited by Tutt as an extreme rarity which owes its name to Mousley. Of unipuncta I have no less than 26 specimens, seven of which are 3 and nineteen 2. An extreme form of Mousley's butterfly is one having not one, but two basal eyespots; of this I find two specimens, one 3 and one 2, in my series, and propose for them the Courvoisier name bipuncta (nov. ab.). The orange bands of the uppersides are sometimes very broad and sometimes disappear; generally speaking the larger the butterfly, the broader the bands. The casaicus taken at Pajares are generally smaller than those from Branuelas; it is, however, vain to break casaicus up, as Tutt does, into several forms, butterflies of extreme sizes and breadths of band being found flying together. On the heather on which we found this pretty insect I also had the good fortune to take two splendidly black-spotted specimens of P. napi 2, one of 50mm, and the other, a napella, of 23mm, wing expanse; the great black spots extend to the margin of the wing. Here, too, I boxed two fresh specimens of Arctia fasciata, one 3 and one 9; the latter laid a large number of eggs, which hatched out before I left Spain and were fed on all kinds of food during a very PAJARES. 123

long voyage home; these were all doing well when I left Switzerland for England in January. When I returned here in the middle of April, I found that but a few were alive and flourishing, the rest having died. I shall not easily forget feeding them on August 20th; I sprang out of the train and gathered a few dandelion leaves growing on the lines. The attention of some French veterans was attracted by my strange conduct, and they approached with fixed bayonets to see what I was up to. As they saw my handful of leaves they at once concluded that I was going to make myself a salad, and were very sympathetic. Three days later I fed them in a meadow near the station of Ambérieu, and, made lively by the sun, about 100 of them escaped and gave me a fine hunt. Fortunately, the train made a very long halt there.

Few butterflies other than those I have mentioned were taken at Pajares. A single L. arion, a few Tarucus theophrastus, flying with Polyommatus boeticus over a mixed barley and pea field close to the casaicus heather patch, some P. apollo on the slopes of a gorge, and a single specimen on the heights, a sprinkling of Chrysophanus hippothor, single specimens of Glaucopsyche melanops, Muschampia proto, and Powellia sao var. eucrate, got into my net. Coenonympha arcania was to be found on all the hillsides. Epinephele jurtina ab. hispulla was abundant in all the meadows, and I took a few E. tithonus and a single E. pasiphar on the border of a copse. Urbicola comma was going over. The nettles and thistles, there were large patches of both, were peopled

with io, urticae, atalanta, and cardui larvæ.

A few moths came to the light of our acetylene lamp in the pigsty, and others were met with while in the field. I have set the following:—Ortholitha plumbaria (dark), O. bipunctaria, Eurranthus pennigeraria var. chrysitaria, Hepialus altivola, H. castilanus, Perinephele lancealis, Acidalia nitidata, Larentia montanata, L. galiata, L. dotata, L. bilineata var. testaceolata, Phasiane petraria, P. clathrata (dark), Orgyia aurolimbata var. guadarramensis, Gnophos asperaria and var. pityata, G. mucidaria and var. ochracearia and ab. grisearia, G. millata and var. confertata, Ellopia prosapiaria, Nemoria sp., Codonia sp., Plusia chrysitis ab. aurea, P. gutta, P. gamma, Cilix glaucatus, Anartia myrochracearia, Anthrocera scabiosae and ab. divisa and var. orion. Thyris fenestrella, Malacosoma castrensis var., Enistis quadra, Bryophila algae (dark var.), Mamestra dentina ab. latenai, Dianthoecia cucubali, and D. compta var. galactina. The galactina is especially interesting as, so far as I know, it has not been taken yet on the Continent of Europe. At all events the authors do not give it as having been taken anywhere on the mainland, its habitat being given as Sicily.

The moths that some people are still pleased to call micros I have not yet had time to work through, but they were fairly plentiful on the "maquis" of the hillsides round Pajares. The Crambus that seemed

to be most abundant was C. mytilellus.

A further account of our work in Spain I now leave to the able pen of Mrs. Page, who joined us when we left the pigsties.

# In the Cantabrians. August, 1914. By ROSA E. PAGE, B A.

"O blest seclusion from a jarring world Which he thus occupied enjoys."—Cowper.

"That is my highest joy, that I am beyond the reach and press of the world."

—Luffmann's Quiet Days in Spain.

How true the above quotations were to prove I little dreamt when I left England towards the end of July to join Mr. Page and Mr. Muschamp in Spain. I found them both very disappointed with their fortnight's work at Pajares, where there seemed to be practically nothing to do, entomologically speaking. We therefore decided to make a move to Brañuelas, a village on the direct line to Coruña, and right among the Montañes de Leon. Reaching Leon about 10 p.m., we supped at the Station Fonda and procured a few hours sleep in the dépendance, picking up the Madrid-Coruña train at 4 a.m.

The journey from Leon to Coruña was most delightful, and showed us quite a new type of scenery. The reddish-brown soil glowed with ruddy hues as a magnificent sunrise gradually lit it up, the Montañes de Leon forming a low line along the distant horizon and standing out in much darker lines from the lighter tints of the campo. As the train crawled slowly westward we passed village after village of sundried bricks (a composition of mud and straw), the exact tint of the soil, with here and there trees of a variety of poplar, the branches of which had been lopped in such a manner as to leave a regular series of tufts from base to crown.

Arriving at Branuelas, we found there was no accommodation for visitors except at the Cantina of Román Fidalgo opposite the station, a very dirty place, with food "en suite," but the beds a little better than one might have expected. The village itself is not so dirty as those we passed through in the Albarracin Sierras, but water is a rare commodity and sanitation non-existent. The old village, about ten

minutes' walk, is still more primitive, and quite impossible.

We found the rock here a carboniferous one, as at Pajares, and the rounded hills of only slight elevation covered with various species of heather and two or three varieties of a large-flowered Erodium, which gave us hopes of finding Coenouympha dorus var. mathewi. On July 31st we followed the waters of the valley from their head, working the marshes on both banks. Here Coenouympha iphioides appeared in numbers, a fair proportion of both sexes being fresh. We found the larger proportions of the specimens in the drier part of the marsh, and especially in a small grassy patch close to the stream. They fly on the level of the tops of the reeds, and one has to follow up each insect as soon as spotted, no easy task, with one's feet sinking into the bog at each step; but about midday they become lazy and lie slightly on their sides ovipositing, in which condition they are very easy to pick up. I noticed, as at La Granja, an occasional Epinephile tithonus flying with them. and a "blue" or two from the higher slopes.

The dark green of the heather forms an admirable background for the azure sheen of crowds of *Plebeius argus* var. casaicus, both sexes in very good order, and many with very red spots round the bases of the wings; they are rather larger than the Pajares specimens. Of other insects there were only *Pontia daplidice* (mostly over), Colias edusa, Melanaryia luchesis, and a single Lampides boeticus. Up to now no sign

of Coenonympha dorns var. mathewi.

August 2nd.—On the hills among the heather we at last found  $\mathcal{C}$ . dorus var. mathewi, but very scarce; the total number taken by the three of us, after much tramping up and down to get them to rise, was 18 specimens, of which only the 2 s were fresh; one 2 was taken in the afternoon, resting on heather, among a crowd of Plebeius argus; but all the other specimens had settled out of sight, and when disturbed flew a short distance and then settled again. P. argus was everywhere, flitting among the bushy heather all the morning, and resting in the afternoon about six inches down the stems. Although many settle on one plant, very rarely is there more than one on a stem, and they appear to arrange themselves so as to simulate a cluster of flowers.

Besides these few species, there seemed to be nothing at all, and if one may confess it, we found the Montañes de Leon somewhat monotonous, with their eternal repetition of gently-rounded heather-clad

summits, in whatever direction one tramped.

After some poring over the wonderful geological maps (the only ones procurable and not in the least to be relied upon), we fixed on Ponferrada as a new centre from which we could, by means of a tent brought with us from England, explore both the Cantabrians to the north, and El Teleno in the Montañes de Leon to the south. It also, so far as could be ascertained from the map, promised a different rock to the carboniferous, which had not, so far, brought us much luck.

At Ponferrada we found the only fonda quite comfortable, although of course the cooking is Spanish; the extensive view from the balconies over the city and the campo towards El Teleno is, to my mind, quite unique, and the collecting is in every way more interesting than at Branuelas. In May and early June I should say it would be an ideal spot for a stay, and it would be interesting to know what species are to be found there at that time. In August we found most of the flowers dried up, and the hills looking quite bare. Crossing the Roman bridge, and getting up into the hills on the 4th, we worked up a dry torrent bed, shaded by chestnut trees. There were Epinephile ida (3's all passés) flying with Aricia medon (astrarche); rather large Rumicia phlacas ab. nigromaculata were settling on a large flowered lavender, together with a few Polyommatus icarus; Epinephele jurtina with many var. hispulla and E. lycaon were in crowds under the chestnut trees, resting in very much the same way as Satyrids do; E. jurtina var. hispulla was also in numbers on the dry sandy torrent bed evidently enjoying the heat. Among other captures were two Papilio podalirius var. feisthamelii, one freshly emerged Satyrus statilinus, a single S. alcyone, Melitaea phoebe, and one very worn M. didyma with a few Pontia daplidice, Pyrameis cardui and Colias edusa.

While working in this secluded valley, so far away from home, it suddenly struck us for the first time that perhaps the war might seriously affect the chances of our return; on further consideration, it seemed possible that it was our duty to return at once, although the French lines were all closed for mobilisation and the frontier impossible to pass. We therefore wired to Madrid for instructions, and having done all that was possible, made the most of our time, and next day lunched in the same valley, where, however, we found nothing fresh,

except a single specimen of Papilio machaon. A wire had meanwhile arrived, advising us to take an American boat from Vigo or from Coruña, and another informed Mr. Muschamp that the Swiss frontier was closed except to reservists. The next few days were passed in much uncertainty as to what might be the right thing to do; from the replies it was plain that no help could be expected from the consuls; we decided to remain where we were, and trust to the French frontier being re-opened and the train service to Paris re-established after the completion of mobilisation. All hope of penetrating the mountains with the idea of camping there now had to be abandoned, so we made the best of the grand sunny days still left to us, by working in the immediate neighbourhood of Ponferrada.

Our favourite collecting grounds were the rocky banks of the Rio Sil, above the town—a delightful spot, where in the hot sun, we took a few Lampides boeticus, several pairs of Pararye aeyeria gambolling under the chestnut trees, and a couple of prettily-marked P. maera: C. edusa and P. daplidice were everywhere, and S. statilinus was just emerging. Here it was our wont to take under the trees, a light repast of eggs, trout, green figs and wine, and some of us slept away the afternoons in the shade of the chestnut-trees, lulled by the gentle flow of the limpid river, the singing of many birds of species unknown to us, and the gentle breezes which tempered the heat of the fierce Spanish sun, while the energetic minority scoured the slopes in the hopes of finding new species.

While rambling one afternoon among the ruins of an exceedingly fine old castle of the Knights Templars, which dominates a bend of the river, to our delight we came upon several *P. podalirius* var. feisthamelii circling round the highest tower, and ever and anon alighting on the ragwort with which the enclosure was covered. Being without nets, we could not resist the temptation to follow them up, and had very little difficulty in taking them from the flowers with our fingers, setting them free again for the mere pleasure of watching

them fly.

The heat continued, culminating on August 11th in a grand thunderstorm. The 12th was a hot but very pleasant day, and we worked the hills through which the river cuts its way, finding much the same insects as before, S. statilinus increasing in numbers. Mr. Muschamp took the first S. fidia, just emerged. S. statilinus appeared to be everywhere; they settle most frequently on a species of hollythistle, where the ? probably oviposits. They have a habit, when disturbed, of flying a short distance, but are easy to capture if stalked; they like to rest on stones, with wings tilted sideways. Each day we took a few P. podalirius var. feisthamelii, Mr. Muschamp picking up one very yellow specimen. P. marhaon were also captured, together with a pair of Melitaea didyma, in cop. A fresh brood of P. cardui were now emerging, while C. edusa seemed to be continuously brooded; E. ida were still coming out, as were some Pyrameis atalanta from During this heat wave we found the river most Pajares pupa. attractive, the water being quite warm. Here, lying on the sun-baked rocks, and glad of the slightest breezes wafted over the water, we envied the trout darting to and fro or hiding under the rock ledges, and watched the clouds of dragonflies, the deep blue males glittering with purple iridescence as their wings caught the sunlight, flirting and mating with their greenish-yellow partners.

On the 13th we tried new ground towards the *campo*, but turned off to the left just over the bridge and followed the stream downwards; we found no butterflies here, and were presently barred by precipitous rocks, up which we scrambled and reached some rough hills above, overlooking the railway from Astorga. Here we saw many S. statiliums and a couple of S. jidia, but found them very wild owing to a strong

wind which was blowing.

The next day was devoted to some garbanzos fields near the Roman bridge, where L. boeticus was plentiful but in varying condition, flying with a second brood of \( \begin{align*} \cdot daplidice, \text{ an occasional } \( P. \) podalirius or \( P. \) machaon, and a single specimen of \( Colias \) edusa var. helice. \( L. \) boeticus flew low among the chick-peas, the pods and leaves of which were as dry and brittle as can only be possible in a country so parched up as Spain is in August. About one-third of our captures were worth retaining, which may be partly explained by the quantity of garbanzos débris netted with them. It says much for the courtesy and long-suffering of the peasants who passed on mule-back, that they did nothing more than shout at us.

On our last day in Ponferrada Mr. Muschamp took a very worn Dryas pandora near the Rio Sil; this is an interesting record from the

locality.

The French mobilisation being now completed, the Government arranged to run one train a day to Paris, commencing on the 19th; we therefore got on as far as Burgos, so as to be within easy reach of the frontier. Having wired to the French Consul at San Sebastian for instructions, we took our nets, and following the Paseo to the Cartuja de Miraflores, on a bare hill in high wind took S. statilinus and C. pamphilus ab. pallida, the latter of which was the same form as we had taken at La Granja in 1912; one ? P. coridon ab. obsoleta was also netted here. No answer having come from San Sebastian, we worked the same ground again next day; the air being close and the sky overcast, we observed S. statilinus to be as tricky as D. pandora had been at La Granja on a similar day. In addition to the insects noted, there were Hipparchia briseis, C. edusa, C. hyale, P. daplidice, E. tithonus, Melanargia lachesis, E. jurtina, and a tribe of very small E. lycaon, with one ? and four 3 coridon var. arragonensis.

Here collecting ended, as we left Burgos next morning at 3 a.m., and spent the day in San Sebastian, fulfilling the requirements of the French consul with regard to passports and photographs. Leaving in the evening for Hendaye, we found ourselves the only passengers in the train as it crossed the frontier, and we were privileged to have the attention of the military and customs officers centred upon us. They were, however, very friendly, frankly admired the insects, and passed all our luggage, camera included. Of the journey home through poor unfortunate France, and the contrast between her and the happy, peaceful Spain we had left behind us, of the kindness shown us everywhere, (and especially at Paris by some English gentlemen who had only just succeeded in escaping from Germany, and were returning home, ruined by the outbreak of war), I cannot write here. For the first time, we regretted maligning on previous trips the dear old English Channel; the crossing had always been a bête-noire, but we now knew La Manche to be the only bar to a similar invasion to that which was taking place so near Paris.

### A Note on the Chrysophanidi, and Polyommatus amandus.

By B. C. S. WARREN, F.E.S.

In the March number of the *Ent. Record* there were some notes on the *Chrysophanida* by Miss Fison, in which the fact that she had not observed the species of this tribe in abundance during the last two seasons' collecting was attributed to the weather and made the basis of certain arguments.

The majority of the *Chrysophanida* are somewhat localised in their habitats, and three or four visits on separate days to such localities cannot give one anything like a sufficiently accurate amount of information, as to their abundance or otherwise, for such arguments.

I collected during the seasons 1913 and 1914 in the Rhone valley and neighbouring country, over much of the ground referred to by Miss Fison, and my experience has been very different. Without claiming to have given any particular attention to the species in question, I should say they were quite as well represented as usual, and judging from the series taken, and those taken by friends, both C. hippothor and L. alciphron var. gordius were unusually abundant. H. vigaureae is of course seldom abundant in the lower valleys of Switzerland, and L. dorilis is always erratic in its appearance, but of it I have seen a dozen or more specimens in a single morning at a less well known spot near Vernayaz. C. hippothoë in one or two localities was very plentiful, and L. alciphron var. gordius also. Miss Fison notes that she never found this species "really plentiful" at Vernayaz, but, on June 30th last, when I had the pleasure of taking Col. Manders to Vernayaz, the sight of the day was without doubt the dozens of specimens of this species resting on and flying round the privet bushes. We were both much interested, and I certainly had never seen it in such numbers before.

All collectors know how easy it is to overlook a species, if not singled out for special attention. A marked instance of this was shown in another note of Miss Fison's. She writes (Ent. Rec., vol. xxvii., p. 16)—"Charpigny is quite ideal for orion, and it might get there from Branson as easily as amandus from Vernayaz." P. amandus is quite common in the marshes at the north end of the Rock of Charpigny. One can only suppose that Miss Fison overlooked this fine "blue" both seasons, as she did the Chrysophanidae, and on taking a specimen of it at Charpigny concluded it came from Vernayaz. While mentioning P. amandus it may be interesting to add that it occurs over a great tract of ground on the S. side of the Rhone from Aigle down to the level of Roche, and on towards Vouvry.

I merely publish these notes as it seems a pity to try and found theories on such subjects, with so very incomplete and fragmentary an

amount of data to build upon.

### Egyptian Butterflies.

By P. P. GRAVES, F.E.S.

I have little indeed to add to Colonel N. Manders' most interesting account of his experiences while collecting in Lower Egypt. I had scarcely any time to collect between November 10th, 1914, when I

arrived in Egypt from Turkey, and March 23rd, when I left for Athens. In January and February Anthocharis belemia was noted in fair numbers, and I took an example of Raywardia telicanus in late January in a garden in Cairo. I have not generally taken this species in winter in Egypt. Despite heavier rain than usual the desert was most unproductive. I took four Pontia glauconome in December and January near Heluan. On March 14th I paid a visit to Heliopolis for Hesperia evanida (amenophis, Rev.). Result, one ? Hesperia taken by my companion, and a larva, apparently of this species, taken among spun-up leaves on the lower stalks of Convolvulus lanatus.

On March 17th I went to the Mokattams to look for this "skipper" and saw, but after a hard chase failed to catch, a 3 Catopsilia storella. On the 18th Dr. A. Andrés, of Heliopolis, took a 3 of this species in Wadi Hof. This is the first recent record of C. storella in Lower Egypt, I believe. To the meagre list of Egyptian butterflies I must add Anthocharis charlonia, of which Dr. Andrés took a good 3 late in February, 1908, at Kingi Maryut, a station in the Maryut steppe.

The butterflies observed or taken by me in Egypt this winter were:

—Chapra mathias (just emerged, Cairo, March 21st, 1915), Hesperia evanida, Virachola livia (larvæ), Lampides boeticus, Raywardia telicanus, Zizera karsandra (lysimon of earlier collectors, but identified by the genitalia as the sp. or var. karsandra), Tarucus theophrastus, Pieris rapae, Pontia glauconome, Anthocharis belemia, Colias edusa, Catopsilia florella, Danais chrysippus, Pyrameis atalanta and P. cardui—a total of

fifteen species.

Re Colonel Mander's remarks concerning P. loweii, is not the large intensely coloured Egyptian 3 form var. gigas! It seems to me identical with my Lebanon specimens, which are certainly gigas. The blue 2 has been recently described by Dr. Andrés. As regards Virachola livia, I have obtained the larvæ in spring and early summer, before the pomegranate season, from the pods of "fitneb"—Acacia farnesiana; the larva has also, so I learn, been taken from dates. If climatic conditions prove suitable there is really no reason why this insect should not eventually make its way into South Asia Minor, Crete, Cyprus, and the Peloponnese. I have taken it near Beirut, and am inclined to think it a recent immigrant there.

### An early visit to Ranmore Common, Surrey.

By HY. J. TURNER, F.E.S.

May 9th was a lovely, warm and sunny morning after several fine days, and being at liberty I thought that a trip to an old collecting ground of mine would be a pleasure. A glance into the small garden at the back of the house gave a glimpse of Celastrina argiolus flying across, and on the railway bank beyond Pieris rapae was also among the early risers.

Burford Bridge station was reached somewhat past ten o'clock. Strange to say not a single "white" had been seen on the banks of the railway during the journey down. The dandelion had now replaced the earlier Composite, the Coltsfoot, and other spring flowers were beginning to show strongly. I noticed that one of the row of big poplars near the station had no foliage, and showed clearly masses of

the mistletoe which all of the trees here have borne for so many years past.

Soon after leaving the station the roadside hedge, where ivy and holly mingle, was dotted here and there with the males of *C. argiolus*, either flitting or settling. Strangely there were no females, nor did I see any on my return in the late afternoon, although some of the males were worn.

Continuing along the road, after securing some half a dozen of the "blues," the ruins of the old pilgrims' church was passed, near which, years ago, quite by chance, I picked two or three Roman snails, Heliar pomatia, for a friend, and met with one having its whorl left-handed. Along the roadside grows plenty of the delicate celandine, Chelidonium majus, on which one can usually find a species of the beautiful dustywing Rhyncophorid Aleyrodes. It was close here, too, that several times an adder has been met with curled up basking in the sun. Pasta wood and deserted chalk pit, where later on plenty of Geometers may be met with, the road runs between open fields, usually under cultivation, and produces as a rule at this time of the year Euchloë cardamines and Gonepteryx rhamni. However, on this occasion only the latter turned up, and evidently the former was not yet generally out, as none of the orange-coloured eggs were to be found on the Sisymbrium

officinalis, which grows so abundantly along the hedgerows.

On reaching Bagden Farm the road was left and the unfrequented footpath leading through the fields and woods to Ranmore was taken. Under the adjacent elms there was plenty of the flower-spikes of the toothwort, Lathraea squamaria. This spot is hallowed ground to the lover of nature, for here more than three hundred years ago our illustrious countryman, John Ray, found and recorded the occurrence of this uncommon saprophyte on the roots of the elm. The path leads into a short valley, partly ploughed up and partly covered by rough growth and a few birch, privet, hawthorn, rose, etc., bushes. This is a capital hunting ground both for insects and flowers, but to-day of the former only. Vanessa io in some number were met with. If a search had been made on the tree-trunks of the adjacent woods no doubt the beautiful green Tortrix literana would have turned up, and later on Hamearis lucina, Stauropus fagi, Brenthis euphrosyne, etc. Instead of continuing up the valley, which leads to the well-known post-office tea-house, a return was made to the path beneath the big tree at the right hand side, where grows abundance of the large tutsan, Hypericum androsaemum.

A long walk through the beautiful woods on the northern slope of the common brought me to a lonely house known as Tanners Hatch on the path leading from Bookham past Polesden Lacy, eastern side. Here among low herbage was a large and thickly clustered patch of the lady's-smock Cardamine pratense, on one flower of which hung a G. rhamni. About this spot in years past I have taken Pararye aegeria, but apparently this beautiful species has strangely gone from this as well as from many other of its near-London habitats during the last twenty years. The woods were seemingly very bare of Lepidoptera, for no signs were seen on the fair number of trunks examined, and nothing was stirred from the undergrowth or rubbish. Later on plenty of Drepana unquicula may be beaten from the overhanging beeches which

grow so luxuriantly on this slope.

At last the top of the common was reached, towards the western end, where the woods were more open, with a growth of holly bushes, hawthorn and scattered oaks, and here too were C. argiolus males quite common, with G. rhamni interspersed. This was the old spot for Tricopteryx (Lobophora) riretata, but I have heard of no records of the species having been taken here of late years. Passing through the gate at the western end of the common a sharp turn to the left was made along an old bridle-path through the beautiful woods on the level to the very crest of the hill which dominates the wooded hollow in the Jowns known as Pickett's Hole. In this neighbourhood at the right time abundance of Hamearis lucina, early and late races of Anthrocera filipendulae, a race of A. trifolii, plenty of Agriades covidon, etc., occur. Here too in past years I have taken Melanargia galathea and Pararge aegeria. Now all to be seen were Goneptery, rhamni of both sexes with one or two examples of Euchlor cardamines & and a solitary Pieris napi 3 The woods were filled at this date with bluebells, and having hitherto rarely visited Ranmore Common without meeting white aberrations of this beautiful flower of spring, I pushed into the undergrowth and almost immediately found several spikes of pure white. A halt for an al fresco lunch was made on the top of this coign of vantage, where there is an extensive view of the beautiful Holmesdale valley stretching from Reigate on the east, with the sand ridge of Reigate Park on the south of it, as far as Guildford on the west. village of Betchworth and the town of Dorking, where the river Mole and the Horsham and Portsmouth line pass through the chalk of the North Downs, with Leith Hill, the highest point of Surrey, to the south, while the pretty village of Abinger is directly below. The continuation of the high sandy ridge from Leith Hill, covered by pines, lies right away towards Guildford on the West, with a glimpse of the isolated sandy mount of St. Martha's Hill in the middle of the valley, in view at the same time is the winding track of the S.E. Railway, which traverses the whole length from Guildford to Red Hill, and affords numerous means of ready access to the prolific collecting districts on both sides.

The area of Ranmore Common is so well besprinkled with notice boards that one would suggest that the preparation, etc., of them, must form a considerable industry in the neighbourhood. The fact is that there are many public paths and several "private roads" (which often means public path) as well as private tracks. These boards are so ambiguously placed that it is quite impossible to tell which path is forbidden, the only indication one can get is that at least one of the tracks is public, which of course to the average entomologist is more than sufficient. A ramble through the western portion of these woods on the crest, the spot for the Tephrosia species and Boarmia abietaria, produced nothing but E. cardamines, P. napi and G. rhamni. A path leading on to the open common again was taken with the intention of ascertaining how the "land thieves" were progressing with an old lane I have watched for many years as becoming more and more overgrown. As expected I found that the neglect and overgrowth of years has now been successful. There is a fence across the entrance, the first portion of the road cleared of undergrowth, and dug up, showing a plentiful crop of the flints that formed the road and young firtrees thickly planted. Twenty years ago this was an open track beginning to be overgrown. Further along another path was taken to the southern slope which was traversed to and fro for some distance on the outskirts of the fringe of wood-land, but only the same species were met with. Here are to be found plenty of cowslips and bluebells, interspersed with the early purple orchid, and large quantities of the local plant, Helleborus niger, now showing its green flowers in abundance.

At last a turn homewards was made with a visit to the post-office for refreshment, the only spot for miles round where anything of the kind can be obtained. As a matter of fact not even water can be got at the cottages scattered around. It is said that prompt eviction would follow those who would do aught to refresh the wanderer in these beautiful spots. Having made arrangements with the post mistress for a subsequent visit, the north-eastern somewhat barren extension of the ridge of the common was traversed, and a path taken down through the woods, where Dryas paphia has been freely taken, and where now Celastrina argiolus was flying vying in colour with the superabundance of bluebell which for some years has been so prominent just here. Further on the spot where C. argiolus was taken earlier in the day was reached, and one or two more picked specimens taken, all males, just before reaching the station.

#### Nomenclature.

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#### "TERMINUM EXPLICATIO."

(p. 98).

#### "III. ABDOMEN."

"Pars corporis postica tergum ventremque complectens. Organa hujus mobilia sunt feminis aculeus, et penis maribus.

1. Tergum. Abdominis dorsum s. pars supina, segmenta dorsalia, petiolum, basin, et anum includens.

a. Segmenta dorsalia. Tergi sectiones transversæ, ventralium segmentorum latera obvolventes, spiraculis pertusæ.

a. Spiracula. Pori laterales, in singulo abdominis segmento dorsali utrinque solitarii, per quos respirat animal [Tab. 13, fig. 35, 36. a].

b. *Petiolus*. Pedicellus metathoraci basin abdominis subnectens." (p. 99).

"c. Basis. Pars antica abdominis ex quâ oritur petiolus.

d. Anns. Abdominis apex genitalia exerens, timbriam, aculeum, et penem complectens.

a. Fimbria. Pilorum cilia densa anum vestiens, Melittarum

familiæ ultimæ propria [Tab. 4. **, c. fig. 1, a].

3. Aculens. Instrumentum ovipositionis, et in quibusdam bellorum gladius timendus, valvas et raginam includens [Tab. 13, figs. 27, 28].

a. Valva. Laminæ duæ coriaceæ, quibus vagina retracta utrinque

obtegitur [Tab. 13, figs. 27, bb., 28, aa].

b. Vaqina. Theca cornea spicula jaculans [Tab. 13, fig. 29].
**. Spicula. Aculei ipsissimi, intra vaginam retractiles, bini, fili,

formes, tenuissimi, apud apicem hinc retrorsum serrulatiretinaculo instructi [Tab. 13, fig. 28, bb, fig. 30].

† Retinaculum. Squamula cornea, mobilis, qua retinetur spiculum ne justo longius jaculetur [Tab. 13, fig. 30, a].

y. Penis. Genitale maris forcipem et phallum complectens.

a. Forceps. Unci duo vel plures interdum internè ramosi, quibus mas corripit et comprimit anum feminæ [Tab. 13, fig. 33, aa].

b. Phallus. Organum masculum [Tab. 13, fig. 33, b].

2. Venter. Prona pars abdominis segmenta rentralia includens.

a. Segmenta rentralia. Ventris sectiones transversie."

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(To be concluded.)

## **CURRENT NOTES AND SHORT NOTICES.**

Messrs. P. J. Parrott and B. B. Fulton have issued a pamphlet from the New York Agricultural Experimental Station, entitled "Tree Crickets injurious to Orchard and Garden Fruits." They deal mainly with the three more or less abundant species in the State of New York, Oecanthus niveus, Oe. angustipennis, and Oe. nigricornis. The general characters of these and allied species are given for identification purposes, the distribution so far as is known, and also their economic importance, from their predatory habits in attacking other forms of insect life, and from their injurious work upon various cultivated crops. An account is given of the life stages of tree-crickets, and a section is devoted to "Natural Enemies," of which the most common and most efficient are the egg parasites, eight species of Hymenoptera. The rest of the bulletin is taken up with the detailed observation and experiment with the three species referred to and the means of control recommended. The chief damage arises apparently from the establishment of a bark disease in the oviposition punctures, which causes the bark of the older trees to become scarred and roughened, or kills the bark on the younger wood. This disease is a micro-fungus, Leptosphaeria coniothyrium, of which spores are probably deposited, (1) as a result of wounds produced by the gnawing of the bark by the female as the initial step in the act of oviposition; (2) by means of the ovipositor, the adhesive substance discharged at the time of oviposition serving to collect and hold such spores as may be left in and around the holes during the drilling process; (3) by the remarkable habit of the insect, which employs its own excreta to close the openings in the bark after the deposition of the egg. The chief remedial measures, upon which stress is laid by the authors, are first and most important, clean culture, and if necessary arsenical spraying. Incidentally information is given as to mating habits, musical structures and song of adults, and feeding habits. There are ten plates and a number of text figures in illustration.

The following are interesting and useful articles in the February magazines. The Ent. Mo. Mag. contains (1) a most important contribution by Dr. Chapman, describing larvæ and larval habits of Everes argiades, with five plates, one of which is coloured. (2) Mr. D. Sharp continues his "Studies in Helophorinae" in an account of the aedeagus in that group of Coleoptera. (3) Mr. J. R. le B. Tomlin continues his account of the Coleoptera obtained in Herefordshire. (4) Mr. Sich gives "Notes on the British species of Ochsenheimeria described by

Haworth. (5) Mr. H. Champion concludes an article on the lifehistory of the Snake-fly, Raphidia. The Entomologist contains (1) Description of a new flea, Stephanocircus pectinipes from Victoria, with a plate of details, by the Hon. N. C. Rothschild. (2) An account of the Butterflies of the Bucks Chilterns, by Mr. H. Rowland-Brown. (3) A continuation of the consideration of the Hybrids of Oporabia species, with a plate of the genital armatures, by Mr. J. W. H. Harrison.

In the Canadian Entomologist for March is an article, "The Symmetry of Insects," by H. B. Weiss. The statement is made that, "All insects are bilaterally symmetrical, or, in other words, the two lateral halves of an insect are alike, and symmetry can be defined as a pleasing equality of parts. Bilateral symmetry is sometimes known as horizontal dual symmetry, inasmuch as bilaterally symmetrical objects are usually oriented from a middle point or portion and exploited by equal movements of the eyes to the right and to the left, which is the natural method. As a result the aesthetic value of dual symmetry is greater in the horizontal than in the vertical."

In the same number is a very important article from an economic point of view, "Notes on the Pupation of the House-fly (Musca domestica) and its mode of overwintering," by Prof. C. Gordon Hewitt. The writer points out four methods of the latter habit in northern latitudes, (1) Dormant in cool and suitable shelter; (2) Periodical activity under periodical stimulus of temperature, etc.; (3) Permanently active in warmed buildings, factories, restaurants, etc.; (4) In the immature stages. His remarks on the pupation habits are equally useful to those engaged in sanitation work.

The monthly article in the Canadian Entomologist for March on Popular and Ecomic Entomology deals with the "Importance of Observations on apparently unimportant insects," the author supporting his assertion by numerous instances of detailed work in life-histories which, made years ago, have only recently become of first importance.

In the Scottish Naturalist for March is a record of the occurrence of the Coleopteron, Cryphalus abietis, in Aberdeenshire, a very destructive insect in many pine forests. Scotland has hitherto been immune from attacks of this destructive pest, the only previous record being one by our colleague Prof. Hudson Beare.

The Ent. Mo. May. for March contains a supplement of 64 pages and eight plates, comprising a "Synopsis of the British Siphonaptera," by the Hon. N. C. Rothschild. In all 45 species are included. In the same number the following two species of Coleoptera are recorded as new to Britain. 1. Euthia formicetorum, taken by Mr. Bedwell in decaying wood in the New Forest, recorded on the continent as occurring with the ant, Formica rufa. 2. Bruchus pusillus var. seminarius, taken in a greenhouse from a bag of French beans (seeds) from Essex. It is a species well known in the southern countries of Europe.

The Naturalist for March contains a full account of Yorkshire Entomology in 1914, from reports sent in by the various members of the Entomological Section of the Union. Light and sugar were both very unproductive, and imagines generally were scarce. "Melanism has not been a pronounced feature of the year. Dry seasons seem to arrest the progress of this phenomenon."

The Annual Report of the United States National Museum, for the year ending June, 1914, has been received. It says that, "The deposits

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of insects by the Bureau of Entomology were exceptionally extensive and notable. The largest and most important was a collection made by the force of the Bureau engaged in the investigation of southern field crops, and came chiefly from Texas. This is probably the best state collection ever brought together." Other noteworthy accessions are from the Bahama Islands and Florida, New Mexico, Arizona, California and Alaska, and numerous gifts from individuals of specimens from faunas outside the United States area. No less than a hundred separate publications, from the department of insects alone, have been issued during the year, many of them containing plates and diagrams; twenty-eight of these contributions deal with the Lepidoptera.

In the Entomologist for April, T. V. Theobald announces a limetree aphis, Pachypappa reaumuri, as new to Britain. This is of especial interest both from its rarity and from the fact that the great French observer, Reaumur, described and figured the leaf monstrosity caused by it in Vol. II. of his famous Mémoires pour servir à l'

Histoire des Insectes in 1737.

## SOCIETIES.

ENTOMOLOGICAL SOCIETY OF LONDON.

March 3rd, 1915.—Election of Fellow.—Prof. Wm. Blaxland, M.A., D.Sc., University of Otago, Dunedin, New Zealand. Brenthis PALES AND VAR. ARSILACHE FROM NORWAY.—Mr. P. A. Buxton exhibited a short series of B. pales and B. arsilache from Lesjevaerk and Surendal, Central Norway, the former having been taken at an altitude of 3,000 to 4,000 feet, the latter from 1,000 to 3,000 feet. Signan Species of Euchloë. -Mr. J. Platt Barrett exhibited a series of E. damone from Mt. Etna, and commented on their lack of variation. Also a series of E. cardamines var. turritis, remarking on their small size. Gynandromorphous Lepidoptera.—Dr. Cockayne exhibited:— (1) Gynandromorphous Agriades coridon, from Royston, August, 1914. The specimen was predominantly female, var. semisyngrapha. Gynandromorphous hybrid harrisoni (Ithysia zonaria & X Lycia hirtaria 2), bred in April, 1912, by Mr. Worsley-Wood. Noteworthy British RHOPALOCERA.—Comm. Walker, on behalf of Mr. Adams, exhibited:— (a) A magnificent series of varieties of Polygonia c-album, including several strongly suffused examples, from the Forest of Dean. (b) Two specimens of Araschnia levana, gen. aest. prorsa, from the same locality, taken in 1914. (c) A gynandromorphous Urbicola comma, right side 2, left side 3, from Box Hill. (d) A very fine melanic aberration of Dryas paphia 2, from South Wales. DIPTERA FROM THE FALKLAND ISLANDS.—Mr. F. W. Edwards exhibited two species of apterous Diptera, one belonging to the Borboridae, the other to the Ephydridae, both collected in the Falkland Islands by Dr. Malcolm Cameron, Fleet Surgeon of H.M.S. Cornwall, on December 7th, the day before the naval battle. Both appeared to be new to science. A Hybernating Pupa of Pyrameis atalanta.—Mr. L. W. Newman exhibited a living pupa of P. atalanta, and read notes on the copulation of Pyrameis atalanta in October, and the hybernating of the species in the pupal stage. A large family of Acraea encedon, L., Bred at Durban

FROM A KNOWN FEMALE PARENT.—Prof. Poulton exhibited a portion of this family sent to him by Mr. E. E. Platt, who had conducted the experiment. The Gregarious Habit during Hibernation of Musca corvina, F.—Prof. Poulton described the hibernation of vast numbers of M. corvina in the cistern-loft of St. Helens Cottage, St. Helens, Isle of Wight. A paper was read as a basis for a discussion on mimicry:—"The Mimetic Theory—"A Crucial Test," by Colonel N. Manders, F.Z.S., F.E.S. A most important reply was made by Mr. C. F. M. Swynnerton, which he has embodied in the following paper:—"A Brief Preliminary Statement of a few of the Results of Five Years' Special Testing of the Theories of Mimicry," by C. F. M. Swynnerton, F.E.S., C.M.B.O.U. Several Fellows took part in the discussion.

March 17th, 1915.—A SIKKIM ASILID WITH A LARGE DELIAS AS PREY. -Prof. Poulton exhibited a female Promachus sp., captured with its prey, a male Delias descombesi, Boisd., at Takdah (5,000 feet), Sikkim. A NOTE ON THE AFRICAN HESPERID BUTTERFLY PLOETZIA CERYMICA, HEW. -Prof. Poulton exhibited the specimen referred to in the following note written December 26th, 1914, by Dr. G. D. H. Carpenter, from Kakindu. "I send you a skipper of much interest. It came to light one night [December 23rd] about 9 p.m., and behaved much like a moth; the large white patch on the antenna was extremely conspicuous and really glistened in the light almost as if it were phosphorescent." Prof. Poulton said that the species was usually diurnal. Varieties of Zonosoma pendularia.—Comm. J. J. Walker exhibited, on behalf of Mr. F. C. Woodforde, bred specimens of Zonosoma pendularia, L., var. subroseata, Woodforde, and var. subochreata, Woodforde, with the type form of the species for comparison. Organs in Ants' Antennæ.—Mr. W. C. Crawley exhibited drawings in various species of ants, of two kinds of organs in the funiculi of antennæ. They are often, if not always, in the living insects filled with air, and may possibly be connected with the sense of hearing. He also exhibited drawings of genital armatures of various 3 ants. Teratological Specimens OF COLEOPTERA.—Mr. H. Willoughby Ellis exhibited a male specimen of Carabus nemoralis, Mull., taken at Braemar, May 7th, 1912; the right posterior leg is little more than half the size of the left one; the tarsus has the 4th joint truncate at the base, making it much shorter, and soldered to the 5th joint, which is rather broadened. He also exhibited a specimen of the dark variety of Campylus linearis, L., taken at Knowle, Warwickshire, in June, 1899. It is of the usual size and, with the exception of the thoracic fover being more exaggerated and the right intermediate tarsus being very remarkable, is normal in all respects. Mr. Champion exhibited, on behalf of Mr. W. West of Greenwich, specimens of Bruchus chinensis, L. (pectinicornis, L.), found in lentils in a London warehouse, also a male found at large at Dartford. Nuptial Flight of Butterflies.—Dr. F. A. Dixey made a communication on this subject. In his experience the 3 supported the 2 in the Pierines.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

February 25th.—Lantern exhibitions.—A special exhibition of lantern slides by Messrs. W. West (Ashtead), A. E. Tonge, E. J.

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Bunnett, C. W. Colthrup, and by Mr. Colthrup on behalf of the members of the Nature Photographic Society, including Messrs. Bedford, Salmon, Sanders, Main, Hocking, Tonge, Irving and Stanley Cook. Bred C. Galli.—Mr. Newman, a long series of Celerin gallii bred from N. Cornwall ova. Sicilian E. Damone.—Mr. J. Platt Barrett, a series of Euchloë damone from Sicily, and remarked on the small amount of variation in the species. Aberrations of A. Caja.—Mr. F. W. Frohawk, a series of yellow forms of Arctia caja from the Scilly Isles, where it was met with in some numbers.

March 11th.—Ephyra pendularia ab, subroseata bred from Surrey, --Mr. Bowman exhibited a bred series of Ephyra pendularia, including e considerable percentage of ab. subroseata. They were a second generation from larvæ beaten in Surrey. The huge Noctuid Thysania AGRIPPINA. -Mr. Gibbs, a specimen of the huge Noctuid Thysania agrippina from Costa Rica, where it sits on tree trunks as does an Eupithecia. A GYNANDROMORPHOUS HYBRID.—Mr. Wicher, a remarkable gynandromorphous hybrid Smerinthus ocellatus 3 × populi 2 in which the left side was 3 and the right side 2. A RARE BOOK .- Mr. Hy. J. Turner, a copy of an uncommon work, Illustrations of British Mycology, by Mrs. Hussey, 1846, with 92 coloured plates, which he had recently bought cheap, as it was about to be torn up by the bookseller to dispose of the plates at a few pence each as "pretty pictures." Micro-SCOPICAL EXHIBITS.—The rest of the evening was devoted to exhibitions under microscopes. Mr. Adkin, the structure of the cocoon of Dicranura rinula and antennal structure in Lepidoptera. Mr. Edwards, a species of Nycteribia, the parasite of the Fishing-bat. Mr. West (Ashtead), androconia of Pieris brassicae, a Coccus found on bananas, and Hypoloxylon coccineum, a micro-fungus on wood. Mr. Coxhead, a number of mites infesting a brazil-nut. Mr. Ashdown, minute species of Coleoptera and Hemiptera. Mr. Bunnett, larva of a Thrips which had been attacked by a micro-fungus. Dr. Chapman, skins of the first and last stages of Ercres argiades, with figures and illustrative notes on the same.

March 25th.—Special Exhibition of A. hyperantus.—The evening was specially devoted to an exhibition and discussion of Aphantopus hyperantus, contributed to by Messrs. Frohawk, R. Adkin, Bright, B. Adkin, Edwards, Dennis, Turner, Curwen, Ashdown, Gibbs, and Leeds. Ab. arete, ab. vidua, ab. occilatus, ab. lanceolata, ab. minor, var. bieti, ab. caeca, ab. obsoleta, with numerous other forms were shown. Aberrations of British Lepidoptera.—Mr. Bright showed a fine Argynnis aglaia with numerous coalesced blotches of black, a Polyommatus icarus with extremely light ground on the underside, and a 3 Agriades coridon of the form sauris in which red scaling was developed adjoining the eyespots of the hindwings upperside.

London Natural History Society.—January 5th, 1915.—New Members.—Mr. T. H. Archer, of 52, Elsenham Street, Southfields, and Mr. A. E. Hodge, of Southfields, were elected members of the Society. Scotch Dianthecia nana exhibited.—Mr. C. H. Williams, a long series of Dianthoccia nana (conspersa) from the Shetland Isles and

a few specimens from Croydon. Annual Address.—Mr. L. B. Prout, the retiring President, read his presidential address.

January 19th, 1915.—New Members.—The Rev. C. E. Raven, of Cambridge, was elected a member of the Society. Exhibit of Eurithece.—Mr. L. B. Prout, two drawers containing a series of nearly all the British species of Eurithecia, including very variable E. subfulvata and its Scottish forms cognata, etc.; E. pygmaeata captured flying in the afternoon at Doncaster; melanic forms of E. castigata, E. albipunctata, E. vulgata, etc. Mr. H. W. Wood, E. castigata and its melanic form ab. obscurissima, Prout; E. innotata, showing 1st and 2nd brood usual forms, and some without the usual markings, also of both broods, from Durham, and ab. fraxinata from Middlesborough; also larvæ of Pieris brassicae taken in a garden at Southfields on January 17th, several degrees of frost being registered that morning. M. Tillæ.—Mr. Bernard Cooper, a varied series of Mimas tiliae bred from a Lyndhurst q taken June, 1913.

February 2nd, 1915.—The Annual Exhibition.—Dr. Cockayne, an extreme specimen of Rumicia phlaeas ab. eleus from Berkhampstead. 1911, (a very hot season); a specimen of Agriades coridon ab. semisyngrapha, Tutt, from Royston, showing additional blue scales on inner margin of left forewing (a gynandromorph). Also a photograph of the specimen, in which the gynandromorphic characters were clearly Mr. C. P. Pickett, long series of Agriades voridon from Royston, the result of 4 years collecting, including males and females with underside markings obsolete; ab. inaequalis, Tutt, and certain gynandromorphic females with one side smaller than the other, the small side having scattered blue scales; a specimen in which the male element was on the larger side; and a female unequal on the two sides, the lunules larger and brighter on the right side, which was also of the ab. parisiensis form beneath. Mr. H. B. Williams, Mimas tiliae and some of its commoner aberrations including ab. centripuncta, Clark; and a long series of Amorpha populi including two gynandromorphs bred from one brood in 1914; also a drawer of underside forms of Polyommatus icarus including ab. obsoleta, Clark, ab. antico-striata, Tutt, and others. Mr. H. W. Wood, Larentia flavicinetata, type from Rannoch, and a remarkable, light, local race from Ireland; three yellow abs. of Brephos parthenias from Surrey; Nonagria neurica and its ab. fusca and ab. rufescens from East Sussex: Acidalia immorata bred as a 3rd brood from Lewes, October, 1913; Ptychopoda (Sterrha) contiguaria, and a melanic form, and a drawer of Mellinia ocellaris and all its known British varietal forms including ab. lineago, Gn., and intermedia, also the allied species fulvago, L., gilrago, Esp., and gilrago ab. suffusa: also drawings by Bachlade of the differentiated parts of the genitalia (penis with cornuti) of the allied species ocellaris, gilvago, and fulvago. J. Riches, a series of Abraxas grossulariata bred from wild North London larvæ from 1905 to 1913, including abs. nigrosparsata and deleta (lacticolor), and one approaching varleyata; also on behalf of Mr. Dewey, of Eastbourne, three Arctia caja with yellowish-orange hindwings, and two Arctia rillica with confluent markings, all bred in 1914, and nine Brenthis euphrosyne with confluent markings taken in societies. 143

Mr. G. T. Porritt, Abraxas grossu-Abbots Wood in 1913 and 1914. lariata ab. nigrocostata (a magnificent form), and five extreme ab. nigrosparsata bred from wild Huddersfield larvæ in 1914; also an extraordinary small second brood specimen, bred from a wild larva. Mr. L. W. Newman, series of Callimorpha dominula and its ab. rossica from Kent, of Strymon pruni bred 1914 from Hunts, and of Pieris napi from Ireland, including strongly-marked and yellow females (second brood). Mr. A. W. Mera, series of Coenonympha tiphon and C. pamphilus, the latter including a female with a patch of upperside coloration, containing an eyespot, on the underside of the left hindwing, also the British Acidaliids, including melanic forms of A idalia cambricata and A. incanaria. Mr. R. S. Benton, a specimen Crymodes exulis ab. assimilis taken at sugar at Braemar. Mr. W. E. King, a long and varied series of Hibernia defoliaria from Epping Forest, including a fine melanic 3. Mr. V. E. Shaw, a series of Celastrina argiolus, bred 1914 from Sandown (Isle of Wight) larvæ, a long series of Eupithecia extensaria bred May, 1914, from Norfolk larvæ and specimens of Salebria semirubella, and its ab. sanguinella from Dover, 1914. Mr. H. T. Payne, two drawers of Leucaniids including Nonagria vannae, N. arundinis and ab. fraterna, N. sparganii, Tapinostola bondii, Leucania vitellina and L. brevilinea. Mr. A. W. Buckstone, a specimen of Brenthis selene with black markings obsolescent, from Guildford, Bithys querens ab. bellus from Oxshott, a specimen of Euchelia jacobaeae with hindwings smoky black and transparent, from Oxshott, a fine obsolescent underside of Polyommatus icarus from Sevenoaks. and several smoky females of Bupalus piniaria bred from Oxshott.

February 16th, 1915.—Exhibits.—Mr. W. E. King, a series of undersides of Aphantopus hyperantus, including one ab. lanceolata and several ab. cacca. Mr. J. Simes, some Spanish butterflies, including Thais rumina, Euchloë euphenoides, Zegris eupheme var. meridionalis, Charaxes jasius, Dryas pandora, Melanargia syllius, M. ines and M. lachesis, Agriades thersites, Nomiades cyllarus, Polyommatus hylas var. hispanica, and var. lycidas. Mr. A. Willsden, Dasycampa rubiginea from Bournemouth, Hereford, and Torquay, the Bournemouth specimens being lighter than the Hereford ones, and the Torquay more reddish, also a fine variety from Torquay. Paper.—Mr. J. Simes,

read a paper entitled "A month amongst Spanish Butterflies."

THE LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY.

January 18th, 1915.—Paper.—Mr. Wm. Mansbridge read a paper entitled "Silverdale as a Collecting-ground." Having given a brief survey of the Geology and Flora of the district, the author enumerated a large number of local species of Lepidoptera, generally rare in the North of England, but which had been recorded from this favoured area. Many of these, however, had not been recorded for a couple of decades or longer, and members were urged to endeavour to confirm, such as Agriades coridon, Ruralis betalae, Pararge aegeria, Aphantopus hyperantus, Cupido minimus, Hesperia malrae, Stilbia anomala, Leptomeris (Acidalia) marginepunctata, Amoebe olivata, and Perizoma taeniata; all of which had been recorded some thirty years ago. He also referred to the two field meetings which had been held at Silverdale; gatherings that had been greatly enjoyed by all who had attended. The author

mentioned having taken a fine specimen of Coccyx cosmophorana on May 30th, 1914, in the Gatebarrow wood, also Adela fibulella and Eupithecia distinctaria (constrictata). Eastham Lepidoptera.—Mr. A. W. Hughes exhibited Lepidoptera from Eastham as follows:-Hubernia defoliaria, H. aurantiaria, and a very long series of Cheimatobia brumata, the latter showing great variation from very pale to very dark brown, almost chocolate coloured forms, the last were scarce, forming only three per cent, of the number captured. II. aurantiaria had not been recorded previously for the locality. The Genus Cnephasia (Sciaphila). -Mr. F. N. Pierce showed his extensive series of the genus Cnephasia (Sciaphila), containing all the British species except wahlbomiana and abrasana. With regard to these he stated that it was considered very doubtful whether they had any right to be included in the British fauna or even to be ranked as good species at all. The variation was remarkable in that almost every species showed both melanism and albinism and it is only by a microscopical examination of the genitalia, which can easily be done without damaging the specimen, that the moth can be identified, especially when it approaches the extreme variation.

February 15th.—Pocket-box Exhibition.—The evening was devoted to a pocket-box exhibition of Natural History objects. Pierce contributed a selection of "Insect Habitations," which included portable cases characteristic of the Psychidae, Coleophoridae, and the Trichoptera; he also showed the cases of the Coleophoridae under the microscope, and called attention to the character of the silk of which some of them were composed. Mr. R. Wilding exhibited a number of Tortrices collected in the neighbourhood of West Derby, including series of the following:—Dictyopteryx holmiana, Catoptria cana, Orthotaenia striana, and many of the common hedge-side species. Dr. Cotton, a box of Triphaena fimbria and Carsia paludata from near St. Helens. Mr. W. Mansbridge brought a specimen of the fungus Polyporus betulinus, which, when dried and cut into strips, he used for mounting micro-lepidoptera; also a series of Adkinia (Mimaesioptilus) bipunctidactyla, cinnamon-coloured form, from the Crosby sandhills, and a short series of a melanochroic variation of Ellopia prosapiaria bred from a Delamere female; he stated that, although not usually so dark as the present series, the species is considerably darker in Delamere Forest than in the South of England.

March 15th.—Election.—Dr. A. Randell Jackson, M.D., M.Sc., Westcote, Hoole Road, Chester, was elected a member of the Society. Paper.—Mr. Leonard West, M.I.M.E., read a paper entitled "A Short Account of some Neuroptera." The paper was fully illustrated by lantern slides of the principal species of the various families; these were treated in a way specially designed to enlist the interest of the young entomologist. The metamorphoses and general economy of the Stoneflies, May-flies, and Caddis-flies being ably described by the author. At the close of the paper Mr. West also shewed a number of beautiful slides of river scenery as examples of the breeding places of the insects and as showing the loveliness of the natural surroundings the student would become familiar with in pursuit of these comparatively little known creatures.

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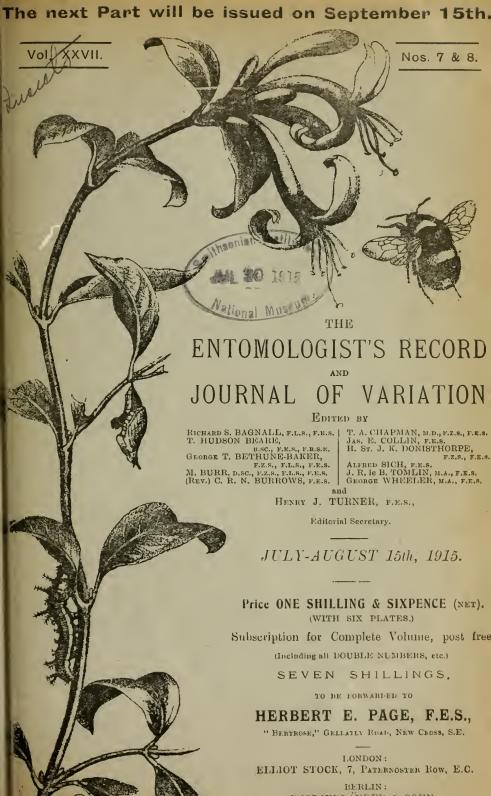
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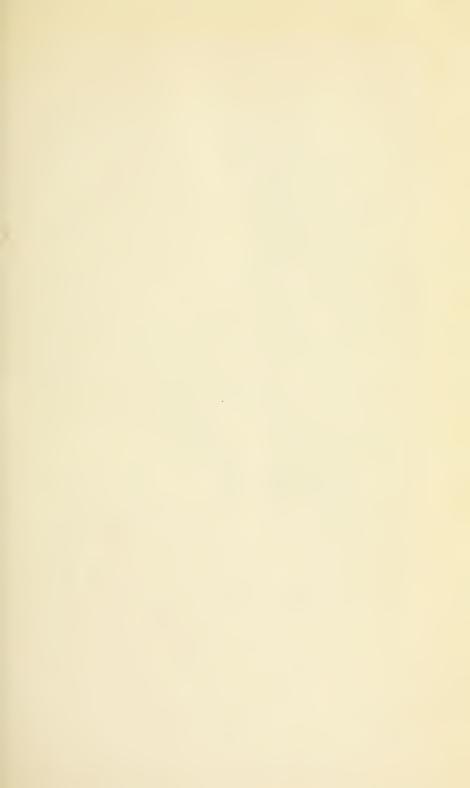
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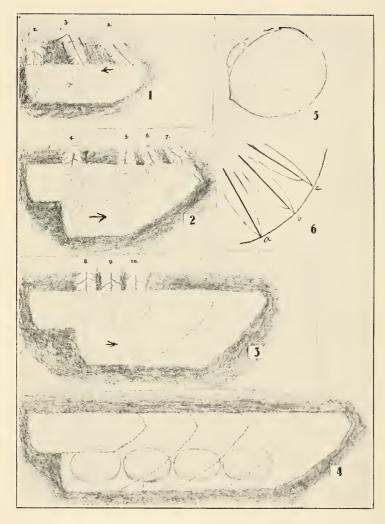
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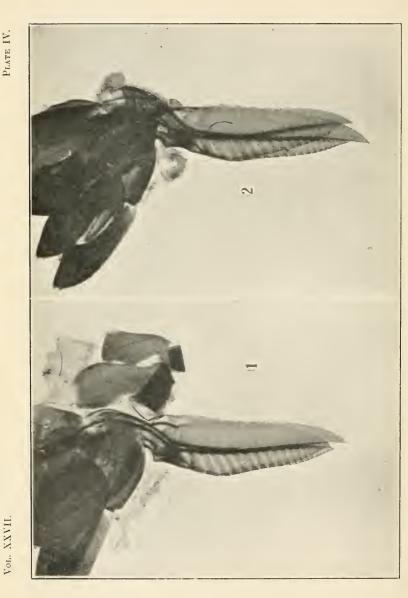


Del. T. A. Chapman.

Diagrams to illustrate the cutting of the pocket by Phymatocera x about 10.

The Entomologist's Record, 1915.





The Terubra of Phymatccera aterrina  $\times 20$ .

Photo. A. E. Tonge.

The Entomologist's Record, 1915.

# The Egg-laying of Phymatocera aterrima, Klug. (With two plates.) By T. A. CHAPMAN, M.D.

Mr. L. E. Adams, having discovered in his garden a colony of *Phymatocera aterrima*, Klug., afforded me the opportunity of observing its process of ovipositing. This is the species that Mr. Morice observed, and gave so interesting an account of in his Presidential address to the Entomological Society in January, 1912. As such records are not numerous, it is not undesirable that further observations should be reported in confirmation and extension of those already made. It seems also expedient to compare the operation of egg-laying as carried out by *Phymatocera* with the procedure of *Trichiosoma*, which I observed two years ago (*Trans. Ent. Soc.*, 1914, p. 173).

Without regarding it as necessary to adopt strict priority in the naming of anatomical structures and various parts of insects, it is well

to do so as far as possible.

Mr. Morice has been kind enough to give me the result of his enquiries as to the names of the several structures used by sawflies in oviposition given by the earliest authorities. Linnaus recognising, that these parts are, as has since been shown, homologous throughout the Hymenoptera, called the piercing organ, as a whole, acuteus.

Latrelle apparently restricted aculeus to the ovipositor of the

Aculeata, giving the name terebra to that of sawflies (and others).

Recognising that terebra is in one sense a partial synonym of aculeus, we may accept it for the ovipositor of sawflies, since though we might call it an aculeus, we could not very well call it a sting. The terebra consists of two plates, each of two parts, which in the vernacular are now known as "saws" and "supports." The Latin names for these as given by Kirby (1802?) are, for the supports, ragina, for the saws, spicula, and for the saw-sheath into which the terebra retires when at rest, the ralrae. Mr. Morice discards scalpellum as synonymous with aculeus (and terebra).

Phymatocera lays in stems of Convallaria which are still growing and succulent, just as Trichiosoma lays in the young growing leaves of Salix. It resembles it in another peculiarity, viz., that its operations are carried out by separating the cuticle from the underlying tissues, and not by digging into the latter. The same process is followed by other species whose eggs I have examined after they were laid, though without having seen the actual laying. For example this was the case with a fly, which, if I remember rightly, Mr. Morice told me was Emphytus grossulariae, of which, some years ago, I bred continuously several generations, on violet. The larva was black with white dots, quite unlike that described as that of E. grossulariae in Cameron's Phytophagous Hymenoptera. This insect is of course unrelated to Nematus ribesii, the gooseberry pest. The eggs are laid singly in the upper surface of leaves of dog-violet, and grow somewhat after they are laid.

A peculiarity in the laying of *Phymatocera* depends on the circumstance that the growing stems of *Courallaria*, in which the eggs are laid, are small, 2mm., 2.5mm. to 3mm. in diameter, larger (and older) stems are not, so far as my few observations go, affected by the insect, the largest I have seen was under 4mm. in diameter. The cutting is done transversely to the stem, and so, to accommodate itself

JULY-AUGUST, 1915.

Sm JUL 30 1915

to the surface of so small a stem, the terebra of the insect has to be bent into a corresponding curvature. The cuticle, beneath which it works, seems to be strong enough easily to hold the saws to this curve. Until one sees that there is and necessarily must be this curvature, there is nothing in the actual working of the saws to suggest that it is so, and certainly it causes no impediment to their operation. One observes nothing to suggest, as something actually seen, this curving of the terebra whilst it is at work, but as it is for its whole length equally visible through the very transparent cuticle, it is obvious that it follows the curve of the surface between the cuticle and the underlying tissue.

(See pl. V., fig. 5, diagram of transverse section of stem of *Conrallaria*, with the incision of *Phymatocera*, through an egg, showing bow the incision curves round the stem, the thinness of the raised cuticle, and the position of the egg, not quite at the bottom of the incision.)

The attachments of the bases of the saws and supports to the abdomen are much more visible than in *Trichiosoma*, and so the movement of the saws may be gathered almost as well by watching the movements of the parts at the extremity of the abdomen.

The posterior margins of the supports for a portion of their basal halves are soldered together, unlike the saws, each of which can move independently of the other, of course only through a small distance.

The fly begins her operations by penetrating the cuticle and advancing the terebra beneath it for half its length (plt. v., fig. 1, 1), then it cuts in the direction in which the saws face, till it arrives at the position Fig. 1, 2. It then carries the terebra back towards position, with the apex all the time within the slit, as indicated in fig. 1, 3, until it reaches the place shown in fig. 2, 4, some way short of position. It then descends to the depth of position. It now again cuts, may we say, downwards as suiting the diagrams, and also as being away from the body of the insect, for the same distance as in the first incision (fig. 1) that is, about half the length of the terebra, to the actual position shown in fig. 2, 4. It then cuts very similarly to the previous cut (fig. 1), passing through the positions shown in fig. 2, 5, 6, 7. The terebra then returns from position 2, 7, to position 2, 4, passing along with only the tip within the incision, as shown in fig. 1, 3. It now descends into position fig. 3, 8, which is practically identical with position 2, 4. The first egg is now laid, in the position shown in fig. 4. The terebra is now withdrawn but not so far as fig. 1, s, but only as far as fig. 3, p, is then carried across the top of the egg and descends into position 3, 10, which is identical with the position 2, 5, but is really, the same position as regards the second egg, as fig. 2, 4 was with regard to the first; the space for the second egg is cut as indicated in fig. 3, precisely as that for the first was done, as shown in fig. 2. Again, the terebra is brought back, in the way shown in fig. 1, a, and the second egg is laid, and so on.

The laying of the egg is very like that noted in *Trichiosoma*, after a short rest some heavy movements occur at the base of the terebra and at the extremity of the abdomen, and almost immediately the egg

appears. It has much the effect of a conjuring trick.

At the margin of the saws at their lower cutting half, opposite the arrows as shown in fig. 3, s, the edge of the egg appears and gradually passes forward till it reaches the position shown in fig. 4. It seems to

come entirely from the narrow piece of terebra opposite to it, which is much too small to hold it. Some trace of its movements may be seen at the base of the terebra, but the egg certainly passes down the terebra to the place where it appears, as a very much narrowed and therefore lengthened body, so that no trace of its passage in the terebra, beyond the heaving movements of the parts, is visible; so that when it does appear, gradually protruding from the cutting margin of the terebra, it appears to come from nowhere or to be suddenly materialised from nothing.

All this agrees with Mr. Morice's observations except as to two One is that I never saw the fly withdraw the terebra from the incision during the whole time she was occupied with it, but always carried it back from finishing the portion being cut to the egg-laying position with the tip within the incision, except on one occasion, when I happened to shake the stem so as to cause the terebra to leave the slit. It was with a little delay and some awkwardness that the fly managed to re-introduce it properly. In discussing this point with Mr. Morice he assures me that in all his observations the terebra was removed and re-inserted as he describes.

Mr. Morice describes the terebra when first introduced as being worked straight in to its full depth at the position it will occupy when

the first egg is laid, that is to the position shown in fig. 24.

There are two difficulties in the way of supposing that this occurs. The first is that all the incisions with eggs of Phymatocera I have seen show a step at the beginning of the slit, as shown diagrammatically in figs. 2, 3, and 4. The other difficulty is that the terebra seems to have no cutting power except in its distal half, by which it can cut all the sections shown in my diagrams, but could not cut the portions shown in figs. 1 and 2 at one operation, as it would have to do if it made the complete penetration at first, nor does it seem probable it would make this deep incision once only during the long process of laying a series of eggs.

The eggs when laid do not reach quite the bottom of the pocket,

but rest a little way above it, as shown in diagrams 4 and 5.

It is also the case that at the line of incision the flap of cuticle does not quite return to its original place, but leaves a slight gap, as indicated in diagram 5. This seems a necessary result of the space taken up by the egg, but may also be due, to some slight extent, to contraction from desiccation.

To return to the actual process of cutting, we may take diagram 2, in which the part above the dotted line is already cut, but the part below has to be cut, the terebra taking up the several positions 4, 5,

6, and 7 in doing so.

Two photographs of the terebra are shown in Plate IV. In my hands, the two plates of the terebia never remain, when mounted, in their natural positions, one accurately applied to the other, so that there would, in such photographs as those shown, seem to be only one plate, apart from any differences in the advancement of the saw.

In my preparations (and photographs) the two plates are always more or less dislocated; this is not true to nature, but demonstrates that there are two plates. A photograph of the terebra undislocated

might suggest that there was only one plate.

In the photographs the supports are to the left, and are not very

much dislocated in fig. 1, except quite at their tips, much more so in fig. 2.

In fig. 1, one plate has the saw and support in the position of rest, that is, their tips coincide; the other plate has the saw somewhat advanced. In fig. 2 both saws are advanced, but unequally. In the movements of cutting, the saws are advanced rather more than the

most forward in fig. 2.

The actual cutting movements differ, not essentially, but in detail, very much from those of *Trichiosoma*. The actual cutting edge is the margin of the "saws," chiefly towards their tips, and hardly, if at all, in their basal halves. But in *Trichiosoma* the ends of the saws curl round the ends of the guides and the cutting is done to a great extent by this curled round tip. In *Phymatocera* the saws remain all the time quite straight, but in the sawing movements extend some way beyond the ends of the supports when advanced, being brought back to be level with them when retracted. The two saws seem to be thus thrust forward and retracted together, with, however, a differential to and fro movement of the one on the other. This differential movement of the saws on each other is of much less amplitude than their conjoined movement on the supports.

In making the pocket, say as in diagram 2, the terebra moves directly forward as a whole in cutting the deeper portion between 4 and 5. In doing this 36 to and fro movements of the saws on the supports were counted. From 5 to 6 the base of the terebra, i.e., the extremity of the insect's body, moves little, and the terebra sweeps round to position 6, making in doing so some 50 to and fro movements of the saws; in still sweeping round in much the same way to position 7 the basal portion of the terebra gradually emerges from the pocket, and after some 50 more strokes, this portion of the cutting is finished and the

terebra returns to the egg-laying position.

During the last portion of the cutting, a curious detail, illustrating the scissors-like process by which the two saws between them do the cutting is easily seen. It may be most easily made intelligible by aid of the very diagrammatic fig. 6, since, simple and obvious as it is

when seen, it is not easy to describe.

The line  $a \ b \ c$  is that to which cutting is done, and as the terebra sweeps forward, the body of the insect being the centre, the end of the supports follows the dotted line (unfortunately omitted in Plate, it should pass through the ends of the supports as  $a \ b$ , c does through the ends of the saws), but the saws, continuing their thrusting and to and fro movements, gradually extend further and further beyond the supports as at b and c, then by a movement of the insect the supports slide down and resume at c the same relation to the saws that they had at a.

In the straighter portions of the cutting the relative movements are the same, but the supports remain at some distance from the lower

margin of the pocket.

What most interests me in these observations is their bearing on the question as to how the cutting is really done by the terebra, is it sawing, or cutting, or splitting, or by a wedge? They left on my mind no doubt that the cutting is done not as by a knife or a wedge, but by a seissors action, much as horse-clippers act. A number of projecting edges on one saw continually pass too and fro across similar edges of the other, and at each such passage the action is that of a pair of scissors. In *Phymatocera*, the saws as they cut in this way remain quite straight, but as they cut they gradually extend beyond the supports so far as they can, and are then withdrawn, to repeat the process one step forward, or what comes to the same thing, the supports are advanced to where the saws have reached so that they can again advance.

#### EXPLANATION OF PLATES.

#### PLATE IV.

Two photographs of the Terebra of Phymatocera  $aterrima \times 20$ . In both the two plates of the terebra are dislocated in mounting so as not to be exactly over each other, as they are in nature. The saws happen to be in relation to the supports in different degrees of advancement, positions they pass through when in action.

#### PLATE V.

Diagrams to illustrate the cutting of the pocket by *Phymatocera*. These are sufficiently referred to in the text; it is only necessary here to emphasise that they are diagrams and not drawings, and though fairly to scale, are not to be taken as accurate in this respect. They are about ten times natural size.

## A Day in the ———.

By Lieut.-Col. N. MANDERS, R.A.M.C,, F.E.S.

[Note.—Owing to the strict censorship of our correspondence I am unable to state the exact position from which I write, but I daresay entomologists can make a fair guess from what I have written.]

The following, except for a few verbal alterations, is taken verbatim from my notebook dated May 3rd. I may first, however, give a general idea of what the surrounding country is like. To those who know the Riviera, and more particularly Hyères and the hills at the back of it, I need only say a description of that locality would fulfil all needful conditions except that of course there are no houses and practically no cultivation. The hills are exceedingly steep, with deep precipitous ravines covered with dwarf holly, Mediterranean heath, myrtle and rhododendrons. The pretty pink and white cistus covers the hillsides everywhere, the broom is just coming into flower; the one small open field, the only flat piece of land about, and now converted into a cemetery, is carpeted with a beautiful pink convolvulus, which no doubt in after years will cover the graves of our comrades. The view from my dug-out is very similar to that looking south from any place on that favoured coast. Beautiful summer weather prevails, with cold nights, and were it not for the perpetual cannonade and musketry one could thoroughly enjoy a ramble over the hills—a joy at present entirely denied us. But I am wandering from what I set out to do, and which runs as follows:- 'I am writing this at 9.15 a.m. at the bottom of a steep wooded valley sheltered behind a bank covered with heath and holly, alongside me on a stretcher is a desperately wounded man, and close around are the bodies of an officer, four men and a mule lying in and beside a muddy stream, which is the only path. All were killed by snipers two days ago, but it has been too dangerous and times have been too strenuous to remove and bury them. The gully here leading up to the firing line beggars description. It is full of old meat and biscuit tins, boxes and broken rifles, kit of all sorts, many dead mules and not a few dead men. Testaments and bibles are also among the débris. The butterflies flit about undisturbed by the turmoil, and among this squalor and filth, with a constant stream of wounded on stretchers, donkeys' and men's backs, with mud above the ankles, the painted ladies and green hairstreaks flutter about quite unconcerned. Shells and bullets pass over in a continuous stream, and with the echo from the hills make a perpetual din. And yet from a copse close by, possibly concealing a sniper, wonder of wonders, there is a nightingale in full song! oblivious of the making of history, and only impressing upon a casual listener that after all it is love that rules the world."

# Notes on the Micro-lepidoptera of South-West London. By ALFRED SICH, F.E.S.

It is difficult to find a suitable title to this paper, but the above has been chosen because most of the localities to be mentioned are situated on the south-west side of London. The lanes and open spaces here included have formed the chief hunting-grounds in which, for many years past, I have endeavoured to become acquainted with those most fascinating and somewhat cryptic beings, known as the Micro-

lepidoptera.

The district covered by these observations is so well known, and so much has been written concerning it, that it seems quite unnecessary to preface these notes with any general remarks on its physical, geological or even botanical peculiarities. The area in question is that situated in the Thames valley between Charing Cross and Kingston-on-Thames. It all lies within the ten-mile radius from Charing Cross. The land north of the Thames belongs to the county of Middlesex, and that south of the river to Surrey. The whole district lies at a low level and there is nowhere any chalk or limestone exposed on its surface, so that the plants and the numerous attendant Lepidoptera, which specially inhabit calcarious districts, are naturally absent. Unfortunately, too, the woods have nearly all disappeared.

The following are the localities which will be cited: Coombe Wood, the only real wood in the district, still retained its sylvan features in 1909, and no doubt many species of Lepidoptera still occur there. When in the heart of it, it is difficult to realise that the centre of the great city is not ten miles distant. It is unfortunately not available

as a hunting-ground.

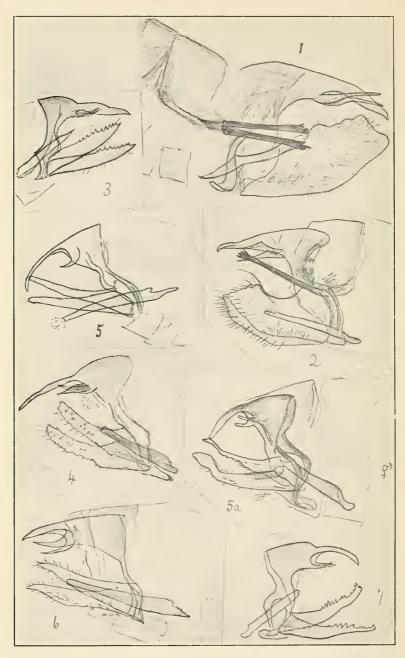
Richmond Park with its ponds, oaks, thorns, birches and fine stretches of turf, in which many wild flowers lie hidden, affords a home to numerous species, and would doubtless contain more but for the

want of undergrowth.

Sheen Common is better favoured with bushes, such as bramble and gorse, but there is no broom. It contains some wild apple trees, and in one damp spot *Drosera* grew a year or two ago and may be there still. Palewell, though very limited in extent, was perhaps, till 1913, the most primitive and undisturbed of the unenclosed spaces. Barnes Common, Putney Heath and Wimbledon Common, Ham Common and Kew are all well known. The chief attraction of the first mentioned is afforded by the presence of broom and Rosa spinosissima. All these localities are in Surrey. On the Middlesex side of the river we have Chiswick, Brentford, Ealing, and Greenford. The hunting-grounds in the first three of these parishes are now confined



Vol. XXVII. Plate VI.



Del. P. A. H. Muschamp.
Epinephele (1) jurtina, (2) nurag, (3) ida, (4) pasiphaë, (5) (5a) lycaon, (6) narica,
(7) tithonus.
The Entomologist's Record, 1915.

to the lanes and hedgerows, and Ealing Common has been improved far beyond the needs of the entomologist. Greenford has still some pretentions to rural conditions but it is a duller and less inviting district than the higher lands on the other side of the river and therefore has had less attention paid to it. The old-time famous Hammersmith Marshes were obliterated by houses and railways many years ago. Owing to the great extension of buildings in these suburban districts, the hunting-ground has greatly decreased in area during late years, and the increased traffic, especially due to motor cars, has rendered many of the lanes so dusty in summer that they cease to be fit habitations for the Lepidoptera. Under these circumstances any great increase in the number of species recorded for this district appears improbable, and it seems, therefore, now opportune to publish the names of those species which do or did recently occur in any of the localities mentioned. The names used are those of Standinger and Rebel's Catalogue of 1901, except where special mention is made to the contrary. A date following the name of a locality denotes the last year in which the species was observed in that locality. (For further particulars of this district see Transactions of the City of London Entomological and Nat. Hist. Soc., for the year 1906, p. 37 et seq.)

Simaethis fabriciana.—Chiswick, abundant. It may safely be said to occur in all the localities, but being such a common insect it has

been neglected.

Glyphipteryx fuscoviridella.—Chiswick, Barnes, Kew, Richmond 1915, and Wimbledon. This species may be seen on the wing at any time during the day and especially in the late afternoon. It haunts open spaces and meadows where its food plant, Luzula campestris, grows. The meadow in Chiswick where the moth was very abundant and the larva was first discovered has been converted into a lawn, and though the field rush still exists in the turf the moth is no longer seen. The larva may be found in April in the stem of the rush below the surface of the ground. (Ent. Revord, vol. xii., 1900, p. 192.)

G. thrasonella.—Richmond, 1907. var. cladiella, Richmond. The type and the variety occur together. This species varies considerably in the intensity of the pale costal markings, in size and colour of the apical spot and dorsal patch, and in the presence or absence of the metallic spots. Some specimens are almost unicolorous. The moth flies in the sunshine and in the late afternoon in damp places about Juncus. Generally there are several together. I have seen them ovipositing in the heads of Juncus, but the larvæ I had all left the rush-heads on hatching. Possibly they feed in the lower parts of the stems.

G. equitella.—Chiswick, 1915. This seems to be a fairly constant species but it varies in the presence or absence of pale marks between the white lines on the costa. It delights to fly in the sunshine over the yellow flowers of the stone-crop. It sometimes comes down from its home on the wall tops into the gardens below. The egg is laid on the leaf of Sedum acre, and the larva feeds in the interior of the leaves. It is not difficult to find, as the pale and shrunken leaves betray its presence. In captivity the larva quits the foodplant to spin its cocoon. This species probably occurs in some of the other localities of the district, but from the nature of its habitat it is not easily noticed. (Ent. Record, vol. xii, 1900, p. 298.)

# The Ci-devant Genus Epinephele. (With one plate.) By P. A. H. MUSCHAMP, F.E.S.

At Ponferrada last midsummer Mr, and Mrs. Page and myself took a large number of E. ida and E. tithonus flying together on the banks of the Sil (north-west Spain). One or two 3s that I netted were so far from the typical form as to render it difficult to determine to which species they belonged. To settle the question I made mounts of the genitalia of the doubtful specimens, together with a number of indisputable E. ida and E. tithonus. The butterflies in question were not hybrids, but simply aberrant E. tithonus. There could be no doubt about this, for though these two butterflies seem from their wing coloration and pattern to be very close to one another, their respective genitalia do not belong to insects of the same genus. Wishing to compare them with their congeners, I at once made a few mounts of each of the European Epinephele and came to the conclusion that several distinct genera are grouped together under the name of Epinephele.

In his able review of the genus Ercbia, Dr. Chapman tells us that from the standpoint of Erebia and its neighbouring genera—of which Epinephele is one—the sickle or uncus is so constant in form that one might say it presents generic characters, while those of the clasps are specific. In working through several genera, I have only found confirmation of Dr. Chapman's conclusion. Now, when I apply this rule to Epinephele and find that the uncus is far from being constant, I am bound to believe that this genus is really composed of several groups, so distant from one another that it would be well to break it

up into several distinct genera.

Epinephele presents the strongest imaginable contrast to its near neighbour Coenonym ha. The former seem to have been lumped together for no very good reason, the latter might all be considered as varietal forms of one or two species (see Mitteilungen der Entomologia, Zürich,

Heft I.).

I am not yet prepared to say exactly where in the Satyrid family the different groups of this most heterogeneous genus fit in, they are all fairly closely connected with Satyrus, but are all, I believe, as distinctly separated from this genus as they are from one another. Unfortunately I only possess very few of the Palearctic, South American and Indian species, and must therefore confine my notes to the European species and their connection inter se. I should be deeply grateful to any collector who may happen to have poor specimens from any habitat outside Europe if he would allow me to examine the same, and thus enable me to learn something about the non-European Epinephele.

There are only seven species of European Epinephele, they are jurtina, nursy, lycaon, narica, tithonus, ida, and pasiphaë. Of these the ovum, larva and pupa of narica are, I believe, unknown; those of jurtina, lycaon, tithonus, ida and pasiphaë do not resemble one another any more than they resemble the Satyrus ova, larvæ and pupæ. There is nothing generically distinct in their antennæ, palpi or veins. It looks really very much as if they were lumped together because they are somewhat similar in colouring, especially in the 2 s. This is evidently a very convenient but perhaps not altogether satisfactory system of grouping. I see, however, that the latest authority on Epinephele, Dr. A. Seitz, does not seem quite comfortable about them:

he says:-"The Palwarctic forms of this genus, about 70 of which have received names, belong to about 25 species, whose relationship to one another is not yet well known in every instance. They are closely related to Satyrus. The antenna are delicate, gradually incrassate, and without distinct club. The palpi are strongly bristly and project a head's length. Eyes naked. Body weak in comparison with the width of the wings, the abdomen of the 2s not nearly so stout as, for instance, in Erebia, Œneis, etc. Forewing very broad, with the costal margin strongly convex, the subcostal very strongly, and the median a little less inflated at the base; the submedian, though a little incrassate at the base, is not inflated. The anal angle of the hindwings often very strongly produced, the external margin being excised above the angle." He then goes on to tell us that they are medium sized to rather small dark brown and russet-vellow butterflies, which have as a rule only one ocellus on the upperside, etc.; falling back on the worn out colour system of classification. Now all this is very well in its way, but might have been written about other genera than that of Epinephele; for example, about Aphantopus. Coenonympha or even Satyrus, if we leave out the colour clause. By the way, it would be well to know the dimensions of a medium sized butterfly, especially as in German and French one word includes butterflies and moths.

Epinephele's sister genera, Erchia, Ocneis, Coenonympha, etc., have had their social position put to the test, verified or corrected from the standpoint of the genitalia. It is fully time for Epinephele to be examined by the Censor. No admittance to Hübner's genus should be allowed to butterflies whose passports do not show their Epinephelian

origin.

Let us first examine the jurtina hispulla-nuray group. butterflies have extremely characteristic genitalia. The uncus is mandibulate and very bold; it broadens out at about half-way between the part to which the lateral processes or brachia are attached, then tapers off like the beak of a bird of prey. The harpes are very broad and heavy, covered with rather fine bristles. It is very irregularly shaped for a Satyrid, being made up of concave and convex hills and valleys that in a drawing make it appear far less constant than it really is; even when the genitalia are allowed to float without any pressure in Canada balsam no accurate drawing can be made with the camera lucida. Most interesting are the long wands of chitinous matter, something between hairs and scales, having their points of insertion at the flattened exterior angle of the eighth sternite. These wands, each formed of a bundle of rods, seem to me to have the same function as the peniculus of certain Noctuids, i.e., they act as brushes for the adeagus. I do not think they can be styled tactile, for the microscope has revealed to me nothing near their extremities that resembles a nerve. They may evidently be extended by a backward movement of the segment to which they are attached, or, more correctly speaking, when the butterfly contracts or extends the last segment, the relative position of the wands is necessarily changed. Their normal position in an unprepared abdomen is the position they take in my drawing of E. nurag. I do not think that Dr. Reverdin's conjecture (vol. xxvii., p. 98, Ent. Rec.) can be the correct solution to the problem. I have listened very attentively to E. jurtina 3s when courting and have caught no crackling sound such as Dr. Longstaff heard made by

Ageronia, or such a sound as we can hear everywhere where Endrosa fly. Now, at about the same time that Dr. Reverdin first noticed the Godman-and-Salvin organ in Ageronia, I remarked it in Perudromia, and we exchanged correspondence on the subject. I had only four different Peridromia species to examine, and, in all four, Dr. Reverdin's organ was much in evidence. Now Dr. Longstaff notes that Ageronia only emits the crackling sound when on the wing. This is just what one remarks in Endrosa; I have often noticed that Endrosa aurita 3 makes its presence known by a loud tic-tic repeated about 70 times in a minute. This cracking noise is so loud that I have heard it when the moth was fully six yards away from me, possibly farther. I have on the microscope before me the big drum or sounding board of E. anrita, a chitinous plate connected with the thorax and the root of the femur of the moth's hind leg. I have also before me a similar part of the thorax of Ageronia arethusa, and of Peridromia amphinome and of P. arinome. These three butterflies have no such inflated plates as that which Endrosa possesses, but they are provided with hard chitonous plates which should be certainly capable of producing a cracking sound. Now if this sound were produced by my friend Dr. Reverdin's organ, it would obviously be more natural that the butterfly should produce it when settled, for then the extension and retraction of the last segment would be most facile. We are told that the sound is never produced during flight. The conclusion is obvious, the crackling sound produced by Ageronia = the ticking sound produced by Endrosa. Either many ages must have elapsed before the Ageronia-Peridromia or the jurtina-nuray organs could have reached their actual degree of development, or they were rapidly produced at an epoch when the hairs and scales had not yet taken a specialized form, and I think generic value may safely be accorded them. I am inclined to believe that Peridromia and Ageronia should be considered as one and the same genus. My mounts of P. amphinome might easily be confused with Dr. Reverdin's mounts of A. februa as published in No. 5 of the present volume. I esteem then that jurting, hispulla and nuray might very well be placed in a genus of their own on the sole evidence of this peculiar and interesting auxiliary genital organ, but when we further take into consideration the Papilio-shaped valva, no doubt can subsist as to the generic separation of these butterflies from all other so-called Epinephele. I have made some twenty mounts each of jurtina and of hispulla, and am inclined to believe that the valve is not exactly the same in the southern var. as in the species; the valve of hispulla is blunter and more squared off in almost every case. As for nuray, of which, for want of material, I have only made two mounts, it has a still squarer and stouter valve than hispulla. I should deduce that it is a specialized island form of the southern var.

The second group consists of *ida* and *pasiphaë*, very distinct from one another in both valva and uncus, still near enough to justify the supposition of a not too distant common origin; the uncus, narrowing at the point of insertion of the brachia, then broadening, then strangled again and finally tapering off slowly, is very similar to that of *jurtina*. The valvæ, however, are of an absolutely different class. Those of *ida* resemble the blade of a clasp knife, or rather, thanks to the regular row of teeth, a broad-bladed saw in a clasp knife. I have before me 30 mounts of *ida*, they are absolutely constant in form.

The uncus of pasiphaë is similar to that of ida, but more finely drawn out; the valve are of a rough and rather irregular form, jagged on the lower side, and without the sawlike teeth on the upper edge; there is also a prominent shoulder. I have only five mounts of this species, four from Marseilles and one from N.W. Spain. Judging from such a very small number, the form of valve and uncus is constant.

There is no peniculus.

The third group consists of *lycaon* and *narica*. The uncus, a prolongation of the tegumen, the dorsal outline of which is an unbroken curve, separates these two species from all other European ci-devant *Epinephele*. The uncus, indeed, looks as though it were of a piece with the tegumen, and not a process of the same. The lateral processes, that I call the brachia, are stout and immovable, springing from rather low down, and broadly separated from the dorsal process, thus resembling the brachia of many of the *Erebia*, e.g., epiphron, nerine, ceto, edda, pronoe, scipio.

The uncus of *lycaon* is extremely long and fine, it curves right down over the valve. This in connection with much shorter brachia gives it a different aspect from the uncus of *narica*. The valve of *narica* are rather broader at the base than those of *lycaon*, instead of gradually tapering off from base to toe, there is a kind of heel and a

rapid tapering off upwards.

In considering the connection between one species and another, I have not allowed myself to take the wing of the butterfly into consideration, but now that this part of the work is finished, it is with pleasure that I remark that the close relationship between *lycaon* and *narica* is entirely supported by the similarity of wing stucture. The lengthening of the lateral and shortening of the dorsal process of the uncus in *narica*—or *rice rersa* in *lycaon*—seems to be an application of Geoffroy's law of compensation which accounts for a fowl with a large tuft of feathers on the head having a dimished comb, or the possession of a large beard being accompanied by diminished wattles. Lengthen the beak and shorten the brachia of *narica*'s uncus and we have the uncus of *lycaon*, The difference between the two is rather apparent than real.

Together with the genitalia of *lycaon* I give a figure of those of the gynandromorphous *lycaon*, about which a note was published in the *Ent. Record*, vol. xxvi., pp. 252, 253. It will be observed that the uneus is foreshortened and lumpy, the valvæ asymmetrical and misformed. For an account of the ovaries and other organs, see above note.

The genitalia of *lycaon* are constant in form. I have too few *narica* to allow me to come to any conclusion on this point.

In the fourth group there is only one European representative, tithonus. The dorsal and lateral process is jointed on to the tegumen, there being a strong depression at the point of insertion. The valva has a cruel jaw-like appearance; several rather small teeth at the extremity, followed by a row of strong sharp teeth, often set in pairs. I have about 40 mounts from Switzerland, France and Spain, and find the uncus absolutely constant in all; the position and number of teeth

of valvae vary, but not more than is usual in sister genera, such as *Erebia*.

I do not think it necessary to say anything further to prove that Epinephele is composed of several distinct genera, the subjoined figures are in themselves such a sledge-hammer argument that none other can be requisite.

So far as I can learn Hübner created the genus Epinephele for jurtina=janira, thus separating this genus from Coenonympha, Pararye, Satyrus, etc., to all of which he had previously given the collective name of Oreades with Oreas proserpina=Satyrus circe as representative. Still earlier Hübner refers to all the Satyrids by that much abused name Papilio.

[In 1816 Hübner published at Augsburg his "Verzeichniss bekannter Schmettlinge." Epinephele is the 6th Coitus of the 4th Familia (Nubilae) of the 9th Stirps (Oreades = Satyri, Fabr.) of the first Phalanx (p. 59). Both Familia and Coitus are, naturally enough, purely colour arrangements. The first mentioned Epinephele is janira, no. 565, and this is followed by endora, Esp. (=lycuon, Rott.), and by synclimene (climene, Esp.). We turn to the 5th Coitus, the Pyroniae, and we find the three butterflies that have been since placed with janira, riz., tithonus, idu, and narica. We have thus a name provided for the tithonus group, Pyronia tithonus. Pasiphaë, Hübner calls it pasyphae (p. 60), has its place in the next Familia—the Marmortae—and belongs to the third Coitus, the Tisiphonae; now, as tisiphone (our glacialis var. pluto) has its uncontested placed among the Erebiae, we may safely utilize the name Tisiphone for the pasiphae group. I don't think I am wrong in assuming that no author has till now separated lycaon from janira, so there is nothing for it but to find it a new name; I should propose then, the new generic name Hyponephele.—P.A.H.M.]

# Notes on the Swiss Rhopalocera. VI.

By the late A. J. FISON.

(Communicated by Miss L. M. Fison.)

Extracts from his letters to, and kindly lent by, the Rev. G. Wheeler. 1905.

1. Loweia (Chrysophanus) amphidamas, Esp., etc.

"Bex, June 9th, 1905.

"On Monday I found a good many Polyommatus amanda flying near Sion, but Melituea aurelia was old. Yesterday I found the place for Loweia (Chrysophanus) amphidamus at the end of the Tinière Road, but there was no sun, and I only took one—a ?. To-day W. of the St. Triphon rock I got one Polyommatus amanda. It was very fresh."

2. Limenitis populi, L., and Loweia (Chrysophanus) amphidamas, Esp., etc.

"Biel, June 19th, 1905.

"Am just back from Yvonand. First I tried a valley betweenhills and valleys S.W. of the station, 1½ miles off—but only found
Brenthis ino, and Melitaea dictynna. Returning I steered for a part—
say one mile S. of the station, where in the centre of the line of

wooded hills, a wall can be seen holding up a broad road (otherwise invisible) which zigzags through the forest. It was then 12.15 p.m. and passing the next corner above the wall I soon saw a Limenitis populi on the moist road, and got it. Three minutes later I saw, but missed, another. Though I stayed one hour there, no more were seen, probably because the sun went in somewhat. That part of the forest was of beech, ash, aspen, oak, poplar, fir, nut, cherry, etc. The specimen I took was very fresh. Saturday I went to the Tram gorge below Orange, and I took seven Loweia (Chrysophanus) amphidamas when the sun got up about 10 a.m. By 11 a.m. it began to rain. I saw no bilberries about there in the cow-pastures, so fancy it would not do for Colias palaeno. The amphidamas were like those from Caux."

## 3. Limenitis populi, L., etc.

"Yverdon, June 23rd, 1905.

"You will like to hear how I got five Limenitis populi to-day at Yvonand, seeing only seven or eight. Getting only one at my old place (the branch of the road going up S.W.) I went down to the junction and up the branch going S.E. There were larger forests, but I only got one until about 1 p.m. Returning from the top to a curved part, say 200 yards above the junction, I suddenly at one place saw a succession of three \(\gamma\) s within five minutes, and got two. Waiting a little, the very fine one I missed again tried to come up the road, but turned too soon. Some ten minutes later I caught a \(\gamma\), and directly after missed a fifth; it was then 2 p.m. Two of my \(\gamma\) s have bad chips, but all seem quite fresh. It is curious to see so many \(\gamma\) s, and to see them two and three together, and in the same spot.

I saw a Limenitis camilla just above the shallow S. curve in the

road."

## 4. Apaturidi and Nordmannia acacia, Fabr.

"Yverdon, June 29th, 1905.

"Am just back from Eclépens, where Apatura iris is fully out. I had 1½ hours in the wood and got four (of 3 vars.), but missed more. Before this, when on the green lane under the hill, and W. of station (150 yds.) I got eight. Nordmannia (Therla) acacia was on elder flowers. Could see no Lycaena arcas. There were many Nordmannia ilicis and the "White Admirals" in the wood were a nuisance. Have arranged for attractive mess on bare path of wood opposite the station. I went no further."

## 5. Apaturidi.

"Yverdon, July 1st, 1905.

"My total catch to-day was 35. Of these eight were abs., three being yellow (ab. clytie) and five black. One clytie and two or three of the blacks are especially fine. One black has scarcely a trace of white on upperside. Of the whole most are Apatura iris. Only four or five are damaged. Before to-day I had caught seven at Eclépens. Of these one was ab. clytie and one a black. Thus out of 42 almost one in four is an aberration."

6. Apaturidi : Polygonia e-album, L.; Satyrus circe, Fab.

"Yverdon, July 3rd, 1905.

"My catch to-day was 35 again, several near Inn, where I got

two Apatura ilia ab. clytie, before filling my water-bottles at the fountain. Of the whole I seem to have five ab. clytie and seven blacks. One of these last is ab. clytie or Apatura ilia. One or two blacks are cery fine, with scarce a speck of white, whilst one has the forewings black and the hindwings much as usual. I think though my best catch of all will be a lovely little ab. of the "Comma." It has a few large dark spots on upperside. It is small but shaped like a usual Polygonia c-album. As the sun went in I went to look for Nordmannia (Thevla) acaciae, and found them very lively, taking eight in about fifteen minutes. I took also there the first Satyrus circe I have caught for some sixteen years.

P.S.—Two of the ab. clytie are large and handsome. Apatura

ilia was more common to-day than Apatura iris."

## 7. Apaturidi.

"Aigle, July 11th, 1905.

"Having now ended my catch of Apaturids, I think you will like to hear the total is 156. This includes 22 Apatura clytie (you see I count clytie now as a type) and 18 blacks (with three or four intermediates). There is also a 2 amongst them. One day I went for an hour into a forest one mile S.S.W. of Chavornay, and although the sun went in at times I took eight easily, including two Apatura clytie. I had not time in the ten days (June 29th—July 8th) to visit any wood at or towards Yvonand. On the 8th at Eclépens the sun was out all the time and I took 42, but only two of these in the clearing, which was practically deserted, as was the pit. On your high road* there were lots. I got eight clytie but only two black abs. Most were still in very yood condition."

#### 8. Butterflies at Binn.

"Hotel Ofenhorn, Binn, July 21st, 1905.

"The season has been so backward here that when I went up a little height on Saturday I found no Erebia at all above the valley. A few Colias palaeno were flying, and lots of Melitaea merope, Melitaea parthenie var. varia, Polyommatus eros, and Latiorina orbitulus. Yesterday near the Albrun Pass was better, and I found some Erebia mnestra with their dark bordered upperwings nearly as narrow as those of Erebia christi, but not so regular or clearly cut. I got about ten Melitaea cynthia in one spot (several rather black); one Vacciniina (Polyommatus) optilete; two Erebia gorge; and the first Erebia euryale and Parnassius delius. On the white Dolomite rocks vegetation was too little advanced for "Erebias" to be out. I have not seen Erebia cassiope, Erebia pharte, Erebia alecto var. glacialis. Two days ago I got two Aricia (Polyommatus) donzelii. . . . . This does not look like the place for Brenthis thore, Erebia eriphyle, or Brenthis pales var. arsilache."

#### 9. Binn.

"Hotel Ofenhorn, Binn, August 9th, 1905.

"Have got little lately until to-day on W. side of the Stockhorn (just above Binn). I got a nice lot (say twelve) ? Colias palaeno—nost white, but three were pale yellow, two of them very fresh. Amongst the ? s is one with patches or bars of greenish colour on the

^{*} i.e., Between Oulens and Bavois.—[G.W.]

black of forewing upperside. Parnassius delius is very rare. Dark ? Brenthis pales are not uncommon. Aricia (Polyommatus) donzelii abounds on road up E. valley, and Polyommatus eros is still fresh there. A fortnight ago I got a dozen very dark Melitaea merope, and ought to have secured more, as they were in crowds. Melitaea phoebe has been very common."

10. Miscellaneous.

"Aigle, September 12th, 1905. "Came here from Binn a fortnight ago. Have now placed in my drawers practically all I have taken this season—and there is perhaps not so much to show for it as sometimes. At Binn I found innumerable ? Colias palacno of different shades (white and yellow), although many were faded. Brenthis pales ab. napaea also was excessively common on the same Alp (Stockhorn), but in the clearings. Lately I have been four times to Martigny between September 5th and 11th, and twice beyond La Tour de la Bâtiaz. Have got three or four Melitaea deione, var. berisalensis. A 3 and 9 I took yesterday were nearly fresh, and so were the Pieris daplidice I found in about equal numbers, indeed they were perhaps better. It is interesting to know how late var. berisaleusis can be had, a fact many may be glad to know, if it is as most years. At Branson Bridge we also got three or four Exercs argiades, var. coretas, a few nicely fresh. I got one fine large Cupido sebros there. I had a long hunt for Lampides (Lycaena) boeticus around the Colutea corner, but saw nothing. The Colutea arborescens bushes are in a bad way—only one had six or seven pods on it. Twice I looked above the vines by the road beyond La Bâtiaz for Satyrus briseis, but could not find it. A collector took many Parnassius delius by Lac Lioson, sixteen Apatura ivis on the Sépey road and some Limenitis populi,"

## 11. Lampides boeticus, L., etc.

"Aigle, September 19th, 1905.

"Yesterday I was at Charpigny . . . . and got four "Pea-pod argus" (Lampules bacticus), rather old of course, but two 1 kept are not too bad. 1 caught three—two high on an ash. I also took two dark yellow Papilio machaen."

# 12. Dryas pandora, Schiff.

"Charpigny, September 23rd, 1905.

"Have just taken a very good *Dryas pandora* here. A slight chip in one wing, but that is *very* little, and it is nicely fresh too. It was on clover flowers. An old ? *Dryas paphia* turned up too, which I took. The *pandora* was between the Châlet and Les Saves."

# 13. Anthocharis simplonia, Frr.

"Clarens, December 11th, 1905.

"If I can go to Charpigny for the two 'mountain Simplonias' from Binn, would you mind taking them for comparison? A Swiss collector says positively 'they are the Swiss form of Anthocharis belia.' I should like the question thrashed out."

^{*} Of course they are nothing of the sort. The early stages of A. simplonia seem really nearer to Pontia daplidice than to A. crameri (helia auctorum).—G.W.

#### 1906.

#### 1. Branson and Les Follaterres.

"May 5th, 1906.

"On the 4th I went to Branson and Les Follaterres for flowers. Although fine, there were scarcely any butterflies at Branson. I got one Scolitantiales orion, one Cupido sebrus, and one Polyommatus (Nomiades) semiargus, but saw no Everes argiades var. coretas—indeed, vegetation there still seemed too backward for them. On the cool side of Les Follaterres corner I saw and caught an Evebia which was, as I expected, a bad Evebia crias."

### 2. Loweia (Chrysophanus) amphidamas, Esp., Everes argiades, Pallas, var. coretas, Ochs., etc.

"Bex, June 16th, 1906.

"Tuesday or Wednesday I hope to go to Yverdon for two weeks at least. Would it still be too early for Limenitis populi at Bramois or Yvonand, seeing this season is late? My more important captures have been—on the 6th: two Everes argiades var. coretas by the canal, 150 yards before the Branson Rhone Bridge from Martigny (a new place, I think); on the 7th: seventeen Loweia (Chrysophanus) amphidamas at Villars-sur-Ollon, but the majority in a place quite new to me. A day at En Saumont Marsh I found too early for Lycaena arcas, and I saw no amphidamas around Bains d'Alliaz. The day, however, was unfavourable. On the 14th I took six Polyommatus amanda below St. Triphon Quarries, in the marsh, and on my bit of land there; and yesterday five more, walking from St. Triphon to Aigle Rhone Bridge by the canal (most were about half-way there). I could see no Coenonympha tiphon near the Rhone Bridge, but the sun was in then. Three of my amanda are  $\mathfrak{P}$ s."

#### 3. Lycaena iolas, Ochs., etc.

"Yverdon, June 22nd, 1906.

"I do not think there can be many Limenitis populi about here. To-day was perfect, and at Yvonand I only saw four, and caught three. Yesterday I saw two and got one—a very fine ab. tremulae. All seem fresh (2s). I must tell you about my catch of eight Lycaena iolas at Sierre on the 19th. Passing the church and going under the railway I took the steep path to the left by the shooting tower or house. About 100 or 150 yards further I saw several Lycaena iolas down on the right and crossing the road, and a few steps further found Colutea arborescens on the left, and iolas flying freely. I never saw so many together before, and two or three times could strike at two 3 s at once. I got two 2 s, and then two 3 s, the latter alive in boxes. Wishing to get more of the crowds about, I went back to the chemist to buy boxes. and on my return, confident of a good haul, not a fly was to be seen. The place was as deserted as other parts to which I soon went off. is true I got one 2 later, by the near arm of the lake, and saw a second iolas, but not another till I returned about 2.15 p.m. to the first spot. I then got two more & s alive and a ? . I concluded that when I caught the first two 2 s the attraction for the & s had gone, and had not another ? turned up about 2.15 p.m. I might have taken no more. I turned out four \( \mathbb{c} \) and two \( \delta \) at Charpigny that evening. \( \text{if } \) I will write you when \( Apatura \) iris appears. I got a \( Satyrus \) circe at Eclépens, but it was lame in one wing. The roads here, too, are far too dry to attract \( Limenitis \) populi. I should think the collector who got six must have done so after the last wet."

4. Limenitis populi, L., ab. tremulae, Esp., etc.

"Yverdon, June 25th, 1906.

"Have got my third ab. tremulae to-day, and that a ? with three red-brown bands over its big body. Ten yards from it I got a fine Limenitis populi ?, but saw no more at all. The three 3 s I have seem to me tending towards ab. tremulae a little. May this be more common this year! 'White Admirals' were rather abundant in the Bavois Wood, but no Apatura iris."

## 5. Brenthis there, Hb., etc.

"Aigle, July 14th, 1906.

"Breuthis there is taken at Faido on the cooler south or west side of the river, in the small forest glades or openings. Crossing the bridge, one goes up south above the first pastures for twelve to fifteen minutes at least. The best place was a larger clearing above and on the forest road. The clearing had a little "source" at the lower entrance to it. and at a second higher entrance is a half-hidden old limekiln hole, as I take it. I got two or three Brenthis there also higher up, where a horizontal path goes along to the grass land. In most clearings I found none, but took one in the wood a good deal higher. None were seen in the woods north of the bridge, but they might still be there in cool but perhaps not too damp places. The Parnassius apollo I got up a gully on a common-like bit south-east of the village. Also below Lavorgo station where the old, disused road crosses the first bridge below it. The old road was excellent, especially near the big cascade. Beyond too, the half or three-quarter-mile-long path to the next railstation was good, but hard to get along on account of brambles. I got 22 Apatura abs. at B†, four or five with only forewings black. Nine were Apatura ilia ab. clytic."

#### 1907.

1. Limenitis populi, L., ab. tremulae, Esp., etc.

"Bex, June 20th, 1907.

"To-day I took at Charpigny, in one stroke of the net, two fine Limenitis populi ab. tremular. They were fresh, but a little chipped. Another was on the same fir trees (north of La Tête) from which the two came down, but would not be tempted to the ground even by some bait. On Monday at Villars (about 1 p.m.) I took five fresh Loweia (Chrysophanus) amphidamas. Have done little else lately, as am kept at Charpigny by the disease amongst our fir trees, which will, I fear, cause the destruction of all of them."

^{* &}quot;Mr. Fison's attempt to introduce iolas to Charpigny bas, so far as I know, been quite unsuccessful."—L.M.F

⁺ No doubt Bayois .- L.M.F.

#### 2. Eclépens.

"Yverdon, July 9th, 1907.

"I saw no Apatura iris or Limenitis populi at Eclépens to-day, and shall not return for them until next week. I got the four usual Theclas, and over the tunnel, I believe, two Lycaeua euphemus (a queer place for them), and four of the pearly Parnassius apollo someone spoke about last year. Their spots and colours are really very fine."

#### 3. Notes on the Season 1907.

"Clarens, December 4th, 1907.

"As to butterflies, there is really very little to write about this year. I never had so bad a season, and fear that its effects will not be quickly remedied. This, however, will be quite interesting to note in 1908. For instance, Erebia aethiops, generally so common at Charpigny in autumn, was scarcely there at all, and there were not many Epinephile tithomus. Except a few fairly dark 'Swallow-tails,' I found nothing to catch. I told you, I think, of the Limenitis populi caught there on June 20th and 24th. It is grievous to say all that line of firs on which they used to sit are now down, and quite half the firs in my wood are gone too—cut down on account of the Bostrych.* By a new order we have to burn the bark of all such trees as well as their branches.

"I have been making out a detailed list of the Apaturids, with the number of their dark aberrations, which I took at Eclépens in the last three years. I quite thought there was an interesting point about it, in the decrease of dark abs., culminating in none this season. However, in counting the eight transitional abs. taken in 1906, as I am doing, in the total of fifteen, there is not much in it; although it is curious that I should not certainly have seen one dark ab. this year, for although I netted only 28 in all quite 70 must have been observed. Var. clytie was not rare, although I only took one. The proportion of Apatura iris to Apatura ilia I have rather to guess at, and of their abs. too. Also, I have a third ab. of clytie, which is not given below in the following list:—

1905. Six days at Eclépens and Chavornay (one hour on July 7th, getting eight), June 29th-July 8th.

Iris. ab. ilia. ab. clytic. ab. Types. abs. circe. populi. 65 10 51 8 21 1 or 2. 156 19 1 1

1906. Six days at Eclépens. June 3rd-July 10th.

42 8 38 6 9 1 103 15 8 7

1907. Three days at Eclépens. July 9th-12th.

4 9 1 14

Upper and lower roads. From Yverdon to Yvonand, two days. July 10th-13th.

12 2 14 16 11 1 28

You see I count *clytie* as a type. I only caught one ? Apaturid—*Apatura ilia*. It is only fair to say the five days on which I caught these Apaturids this year were *very* cool, with north wind, although

^{*} Disease amongst firs, caused by a parasite underneath the bark.-L.M.F.

sunny. One day on the lower Yvonand road I saw a good number of Apatura iris all along, but the strong breeze from the lake must always interfere with what might be a most excellent place, and good probably also for Limenitis populi. I feel rather inclined, if possible, to go again next year to Yverdon, to see if the dark abs. are again as numerous as in 1905. I should like, too, to try the wood south of Chavornay (one hour off) again, where I did so well in an hour in 1905, and to visit a wood I see four or five miles south of Yverdon.

At Finhaut in August I got very little. The only good high place was the large valley beyond and below the Col de la Gueuroz. The Barbarine Club Hut is in it. From its size and isolated position it might be a first-rate place, but I was there too late, and the Parnassins

delius, Brenthis pales, and forms of Erebia I saw were all old."

# The Upper Engadine in 1914.

By Hy. J. TURNER, F.E.S.

Year by year, as my wife and I have passed the great fortress of Belfort and seen the early sun shining peacefully over the prosperous towns, Altkirch and Mulhausen, on our way to the Swiss mountains, have we thought of the terrible scenes enacted and the devastation achieved in the war of 1870. Little did we think as we again saw these fertile fields in the early morning of July 25th, 1914, that almost ere another week had passed, the scenes would be re-enacted with even

greater "frightfulness" than before.

Our usual way is to go direct to Paris, get a substantial evening meal, and do the somewhat tedious crossing of France in the night, reaching Bâle in time for an early breakfast, and thence have the choice of trains to our destination. This year we were bound for the Engadine, and after a good breakfast on Bale platform entrained for Chur, where we had our midday meal and a walk in the town while waiting for the afternoon train to St. Moritz. The weather was delightful, and what could be finer than the grand and wild scenery of the Albula as the train wound its way through the mountains, sometimes at giddy heights above huge ravines, sometimes in spiral tunnels, sometimes in open valleys, always with change of scene, until finally, after passing through the long tunnel under the Guimals to Bevers, we saw the delightful Engadine valley, and leaving Samaden and Celerina behind at last came to the Innfall ravine, and reached St. Moritz station about 6 p.m., quite ready, after a wash and change, for a hearty meal.

The next morning, July 26th, the sun shone gloriously, and I was out before 7 o'clock. My way was along the upper Campfer road, towards that village, to the slopes of the Suvretta, which I found so prolific in insect life in July, 1907. The air was very cool, and everything was soaked with moisture from the rain which had fallen in the night. Turning to the right by the St. Moritz cemetery, I was astonished to see a huge hotel standing right on top of one of the

choicest parts of the ground I had previously known.

Passing some little way beyond this hotel on the lower path I had one of the greatest pleasures of an entomologist abroad, that of seeing the insects creep up from the herbage as the rays of the sun, rising over the mountains, gradually reach them. Not in ones or twos do

they come up, but in countless numbers, and their movements and orientation, or whatever one calls it, seem to indicate that they too have "joy in life." The species, so far as noted, were Argynnis aglaia, A. niobe, Colias phicomone, the mountain form var. aegidion of Plebeius argyrognomen, Coenonympha satyrion with its ab. unicolor, Agriades thetis, Erebia melampus, Anthrovera filipendulae, A. purpuralis (pilosellae), the Noctuids Agrotis ocellina and Noctua festiva (?), both on flower heads, the Geometers Cleogene lutearia and Acidalia flaviolaria in abundance, Xanthorhoë sociata, a plume not yet identified, numerous Tortrices and Tinea, including the common and widely spread Aphelia argentana, as well as many species of Coleoptera and representatives of other insect orders.

After breakfast the road taken, past the house formerly the alpine residence of Prince Henry of Prussia, led up to the gorge which forms the entrance to the wild and secluded Suvretta Thal. This road is usually a most prolific spot for butterflies before the hay is cut. now the cutting had scarcely commenced, and the alpine pasture flowers were at their best. With the brilliant sunshine and clear atmosphere the views of the surrounding peaks, mountains, lakes and valleys were enthusiastically admired by several English visitors who were new to the district and had come out with us for the morning. On the right one could see the peaks of Piz Julier and Piz Albana, towering close above and separating the commencement of the Suvretta Thal from the Julier Pass leading to Tiefenkastel on the Albula, below lay the Upper Engadine valley with its chain of glittering lakes, Silvaplana, Campfer, and St. Moritz, and its lovely pine woods backed by the snow covered Piz Magna, Piz Corvatsch (with its pure white glacier), and Piz Surlej, beyond the village of St. Moritz on the left, looking over the fir covered hills which separates the Upper and Lower Engadine, and which is probably the terminal moraine formed by the great glacier that ages ago filled the valley, can be seen the beginning of the Valley of Pontresina, made by the waters of the Filsbach from the Bernina Pass, with its north-east mountain boundary topped by the snow-covered Piz Albris, Piz Languard, and Piz Muraigl, on the slopes of which lies the home of the much desired Erebia flavofasciata.

Returning to the lesser, if not to us the less, attractive features of the walk, one could but notice the bunches of butterflies drinking the moisture on the roadway. As we passed they flew up in small clouds each few yards. Agriades covidon, Polyommatus icarus, Plebeius argyrognomon, Polyommatus eros, and Erebia tyndarus, formed the bulk of the drinkers, with a few Agriades thetis and Polyommatus semiargus. All the species seen in the early morning were again noted, most of them either flying across the roadway or settling on the flowers fring-The Noctuids mentioned above were on the head of Centaurea and thistles, and with them were the mountain form of Adscita geryon var. chrysocephala. Argynnis pales occurred, mostly quite typical, but one was taken in which the black spots were fairly conspicuous on the underside of the forewings, var. arisilache in tendency. An ab. punctata of Agriades thetis, an Erebia melamons with dots in the dull orange blotches on all the wings very minute as well as reduced in number, plenty of Coenonympha satyrion, both 3 s and 2 s, etc., were obtained.

The afternoon turned somewhat cloudy, with rain in the near distance, and a quiet walk was taken with our friends through St.

Moritz Bad and around the St. Moritz lake to the Meieri for a cup of coffee, of which, having once tasted, the temptation is too strong not to endeavour to make one's rambles terminate again and again at the far-famed "Gasthaus." Just at one point in the walk we saw a rambow in the spray above the Innfall at the exit of the stream from the lake. I might say that the views during the earlier part of our visit were much enhanced by the late disappearance and frequent renewal of the snow on the mountain tops. For a week after we arrived the snow did not recede from the slopes of the Muotta Muraigl above the pine trees. The ground sacred to E. plavojasciata was so covered by snow that a projected visit was put off and unfortunately indefinitely so, for war broke out and all means of conveyance were stopped, small money was quite unobtainable, and when a chance of paying a visit did eventually occur it was much too late for the species to be found.

The early morning of July 27th was very misty and the sunlight was very bright at intervals, but we had determined to go to the Morteratsch Glacier and walk along the western mountain slope towards the Boyal hut. I had arranged to walk from St. Moritz through Pontresina and Mrs. Turner was to come on by train and meet me at Morteratsch station later in the morning. The night had been wet and then frosty, so that the air was delightfully cold as I started to renew my memories of some seven years before, when I had taken the same road. Many were the changes I saw, all no doubt induced by the railway, which did not exist on my previous visit. My way led through the village, by the station, to the Innfall and St. Moritzer See, around which the ground was still white, as the sun's rays had not come over the tops to the eastward. The reflection of the snow-capped mountains in the perfectly clear and still waters of the See was at its best. Later in the day, when agitated by the movements of boats or the changing winds, this is to a great extent spoiled. The Meierei, where one always wanders towards late afternoon for a delightful cup of coffee, seemed unchanged, and early as it was the women were washing as usual at the running stream. Further on was reached Statzer See, a small shallow lake among the pines, now with an ugly restaurant for afternoon tea spoiling its loneliness. The path then led into the pine forest fringing the base of the Piz Rosatsch, still dripping with moisture too much to stir its foliage or undergrowth, but as was always my experience in the some dozen times I passed that way during my stay, the insects resting on the trunks, etc., were very sensitive to every neighbouring movement and flew off in considerable numbers. Species of Scoparia, (inophos and "Carpets" seemed to be the more prevalent. As the path through the woods to Pontresina would be more or less shaded at this early hour, and was also damp, I took that leading across the rail and Bernina-bach to the lower end of the village, expecting to meet with a few insects on the low meadows covered with scattered glacier blocks, but in this I was disappointed, as not a wing was seen in spite of the now brilliant sunshine. Passing rapidly through the mile-long village, stopping a moment to admire the glorious view up the Rosegg Thal with its lovely white glacier at its head, I took the path to the right across the meadows and bach towards the Sansouci Restaurant, now relieved of its loneliness by the near approach of the Bernina Railway and a station. After passing a little way along the path I wandered to the edge of the trees and along the railway banks, where it was more open and sunny, and collected for the remaining four miles to the Morteratsch station. Butterflies were here fairly abundant. Brenthis pales perhaps predominated, the males were quite normal as to colour and size, while the females were of the var. isis form, the upperside dusted with blackish and the yellow of the underside predominating over the red. Some females were of the ab. napaea with upperside shot with purple, but still not of the extreme form of this ab. There was also a tendency to develop spotting on the underside of the forewings in some of the females, a sort of intermediate step to var. arsilache where this spotting is strongly emphasised. One female was a very pale washed-out tint, although in good condition. One example of Brenthis euphrosyne was taken, and this at over 6,000 feet. It was large in size and quite fresh. There were plenty of Erebia tyudarus and C. melampus was in some number. The former were the typical twin-eye-spot upperside forewing, but the undersides of the hindwings were of a dark inconspicuous gray, devoid of character, the latter with a tendency to the diminution of the reddish patches and black spots; in one brought home there are only two reddish patches on the hindwings, and these without black dots. Coenonympha satyrion was very common and generally typical on the underside. All the specimens taken had no apical eye-spot on the underside of the forewings. The males were of the unicolor form. Coenouympha iphis was much worn and only a few were noted. A beautiful Poutia callidize was taken, nearly to the Morteratsch station. There were plenty of Plebeius argyrognomou of the large alpine form aegidion in quite good condition. Albulina pheretes was, as usual, in marshy spots and as usually my luck not in good condition. A Hesperiid was common, which so far as I can see was only Hesperia alveus. A specimen of Larentia caesiata was of large size and with very clearly emphasised transverse markings. A few plumes were met with but none were taken. Anthrocerids only one or two Anthrocera purpuralis (pilosellae) were seen. The little yellow Geometer Acidalia flaviolaria was also very abundant here, as was the Tortricid Aphelia argentana. The flowers noted were Pyrola rotundifolia, locally common under shade, and plenty of Pinguicula rulgaris, the fly-eating butterwort, on the wet marshy banks.

At last the station was reached, and the weather changed. The sun gradually disappeared, and collecting was over for the day. wife met me, and we wended our way towards the glacier, and then up the steep zigzag to the level path skirting the western side. From the Chunetta one has a fine view of the glacier, its terminus, and its whole surface for miles. At one's feet are the smooth rock surfaces made by the glacier when it extended further down than now; on the centre of the glacier lies an unusually wide moraine, and along each side one can plainly see the huge lateral moraines. The path, some five miles, to the Boyal hut goes sometimes on the mountain slope, sometimes on the moraine, sometimes over snow even at this time of the year. As we went it got colder, and finally, when we reached the rough steps for the final climb, it began to snow. This made us, after a rest and refreshment, forego our intention to reach the hut, and we turned back. There was an almost complete absence of insect life, but the patches of colour from the flowers were very pleasing. In many places the rhododendrons were not yet over, and on the moraine

were many flourishing plants of the beautiful Linaria alpina. Near the hut a plume was seen, but the spot was too dangerous to plunge, and it escaped. This was practically the only Lepidopteron seen on the path. The only quadruped seen was a mule, which passed us on the giddy steps near the hut. We ought to have had a glimpse of the chamois from here had the day been fine and bright. All around the Bernina group of the Alps the country is treated as a government preserve for this now vanishing denizen of Switzerland. The return journey was a cold one, and the coffee obtainable at the station was

most acceptable and refreshing.

July 28th was chosen for a long expected visit to the Bernina Pass and Alp Grum. The rail mounts rapidly in zigzags from the Morteratsch station crossing the beautiful Bernina Falls with grand views of the huge glacier with its unusually wide central moraine, and quickly gets above the tree line. The first stopping-place is at the Bernina Hans, which is at the entrance of the narrow and wild Heuthal or Val del Fain, famed as one of the finest localities for alpine flowers, and known to entomologists for the extremely dark race of Brenthis pales which is said to be taken in some numbers about the falls and marshy spots at the far end some six miles distant. The road from the Morteratsch to the Bernina Haus passes through an area of sparsely timbered ground which is a capital collecting place for entomologists and amid the grandest views of snow, glaciers, and mountain peaks. Some miles further on the chain of small lakes is reached and the watershed, a narrow barrier between the "black" and "white" lakes, Lago Nero and Lago Bianco, is passed. The water from the former goes into the Inn and on to the Danube, that from the latter lake flows to the Adda. Lake Como and the Adriatic. By the Lago Bianco the road and rail diverge to unite at Poschiavo more than 4.000 feet below, the former taking the valley north-east of Piz Campassio where easier gradients are available, while the latter takes the much steeper Alp Grum, obtaining its gradients by many tunnels. As Alp Grum is our destination we pass the fine Cambrena glacier and descend the gradients, soon coming into view of the Piz Palû glacier, the curious high-perched but on Sassal Massone and the view station of Alp Grum, which dominates the tremendous deeps of the Poschiavo valley down almost to Tirano in Italian Switzerland, with a grand circle of snow-capped mountains as a background. The air is cold, the sun elusive, but for half-an-honr after leaving the station we enjoy the warmest spot of the day, and the sun allows us to take a nice series of Heodes hippothoë, including a few females which are flying along the path between the only cultivated and cultivatable spots at that height. Of course they are of the eurybia form, but the discoidal is present in all the males, though small. The females are all ab. nigra, in which the upperside is without a touch of orange. Keeping fairly close to the return path (no road is possible here), towards the Bernina Hospice, Colias palaeno is met with, and several Pontia callidice, which latter the steepness of the slopes and the swiftness of the insects allow to escape, except a ragged male. Coenonympha satyrion and C. iphis are both in numbers, but the latter too worn to trouble about. The steep climb having been negotiated a rest for refreshment is called. Below us we note that some workmen are quarrying. Suddenly we hear shrill whistles and at least a hundred

men rush for shelter. A terrific explosion takes place, huge rents are made in the mountain side near the path we were about to take, and great masses of rock roll down, while the echo and re-echo from side to side is grand. We hurry on out of range and come to slopes and hollows which should prove prolific spots for the collector if only the sun could be propitiated. As it was we found Erebia gorge var. triopes commonly (only one specimen of the type was noted), ('olias palaeno several, Cornonympha satyrion in numbers, a few Anthrocera exulans of a robust well-scaled race, one Brenthis pales only, and that a cripple, red predominating on the underside of the hindwings, some Erebia tyndarus and E. younte, two or three "skippers," which might have been prizes unfortunately missed, one female Vacciniina optilete, the only "blue" seen, a fine form in which there was considerable blue scaling on the upperside with pale bluish clouded blotches on the outer margins gradually disappearing in the general ground colour, and several nests of the larvæ of Eriogaster arbusculae, which some authors take to be the alpine race of our E. lanestris of the lowlands, were among the things noted or taken. The flowers both here and on the more rocky places were very interesting. We were not too late at this elevation to meet with both primulas and gentians, and even a Christmas rose greeted us at one spot. The Pinguicula and Soldanella were also seen, the former in abundance. Diverging from the paths, and wishing to see the far-famed Bernina Hospice, we crossed the bare wind-swept Alp, capturing a few Erebia lappona, which were stirred up as we went along. Afterwards we went over the top of the pass (7.600 feet) as far as the road galleries on the eastern side, where there are numerous avalanches in winter and spring. Even now there was thick ice under these shelters, so cold had the season been. From this "coign of vantage" there is a most extensive view of the road as it circles in and out on the gradients for miles adown the valley, and no doubt traverses much ground that is entomologically good. Only one insect could I find here, and that a micro, on the moss just outside the galleries. One could only anothematise the weather and return from this grand locality with the few samples it was possible to take, and the wish to revisit with "better luck next time."

(To be continued.)

# Notes on Collecting in 1914.

By W. RAIT-SMITH, F.E.S.

On previous occasions I have described my notes as collecting in the Abertillery district of Monmouthshire, but as this has been objected to on admittedly reasonable grounds I will change the title of my notes, and more especially as I have done comparatively little collecting

locally this season.

The early months of the year in Abertillery produced nothing beyond the common spring insects in fair numbers. Anisopteryx aescularia, once very abundant here, still remains unaccountably scarce. A few Brephos parthenias were noticed flying round the birches on sunny days towards the end of March. Chimabache fagella in both light and dark forms, with 3 s largely predominating, were very common on tree trunks during April, together with a few Tephrosia bimdularia, of

which species I took a very nicely marked example at rest on a larch trunk on the 24th. I have previously recorded 'allophrys rubi as swarming in a small valley near Abertillery in April, 1912. They were not so abundant in 1913, but occurred in even greater numbers this year. Amongst others I took a very perfect example, having the underside of the wings of a deep bronze colour in place of the usual bright green. Examples with bleached patches on one or more wings were not uncommon. The Pierids were about in fair numbers, Pieris napi as usual by far the most common of the three species. ('oenonympha pamphilus was common enough, in company with odd examples

of Rumicia phlaeas and Polyommatus icarus.

I spent several days in May collecting in the neighbourhood of Port-llan-fraith, principally after Hemaris tityus (bombyliformis), of which species I took an odd example in 1907. I was fortunate enough to find this interesting insect fairly common in one marshy field at Port-llan-fraith on the 17th, eight or nine examples were seen and five were taken as they fed at bugle and other low growing flowers. The easiest way to take this species is to place one's net flat on top of them, it is quite useless striking sideways. This moth does not appear to be on the wing for any length of time. I visited this locality again a week later, but not a single specimen was to be seen, but that may have been on account of the weather, which was dull and cold, as tityus will only fly high in bright sunshine. Melitaea aurinia, which used to occur in this field in abundance, has now almost entirely disappeared, a dozen examples were seen in 1913 and only one this year. I cannot account for the disappearance of this butterfly, as the ground is untouched from year to year, and as far as I know the locality is quite unknown to any other collector. In a small wood adjoining this field I took a fine series of Tephrosia punctularia at rest on birch and alder trunks, together with several nice forms of Hydriomena impluriata and Lamproptery, suffumata. Beating bushes and rough herbage gave several Lomaspilis marginata of varied forms, Euchoeca obliterata, Coremia designata and C. ferrugata, Cabera pusaria, and other common Geometers. One or two Orneodes he, cadactyla were beaten out of honeysuckle. A few Brenthis emphrosyne were noticed on the 17th and 24th, but they were too worn to be worth taking. The males of Saturnia pavonia and Macrothylacia rubi were fairly common in large open spaces, the former at the beginning and the latter at the end of the month. Celastrina argiolus has been more plentiful here this year than usual, several were taken flying round the hollies on the 17th, one or two were fairly fresh but the others were decidedly passé. This is not a common species here as a rule. A few Hadena glauca and Pharetra (Acronicta) menyanthidis were found at rest on stone walls during the first fortnight in May. Pharetra (Acronicta) rumicis was not uncommonly at rest on tree trunks and walls; a nice var. salicis was taken on May 24th.

On May 31st I went down to Bickley, Kent, for a few days. Collecting at Bickley is almost entirely confined to searching the fences and going round the lamps at night. Searching the fences was rather productive. Hepialus lupulinus was very abundant, a beautifully marked example having the ground colour silvery white was taken on June 1st. Eupithecia rulgata was another very common species, dozens were seen in the course of a week. Amongst other species

taken or noticed on the fences were Xauthorhöe fluctuata (common), Spilosoma menthastri and S. lubricipeda, Xanthorhöë montanata (common), a Coremia quadrifasciaria on a fence near Chislehurst Common, Tephrosia punctularia, Camptogramma bilineata (common), Xanthorhöë sociata, Gonodontis bidentata, Hadena dentina, one very dark suffused example was taken on June 7th; Apamea basilinea, Acidalia rirgularia and Coremia ferrugata, as well as several Tortrices and other small fry, including three fresh Oecophora oliviella taken on a decayed oak post on June 6th. In a lane near Bickley the brilliant Harpella geoffiella was flying over the rank herbage in the ditches in dozens, active when the sun shone, but very lethargic and easily boxed if the weather was at all dull. This lane also produced a few Adela fibulella. Butterflies were rather scarce. I only noticed the following:—Pieris brassicae, P. rapae and P. napi, Enchlor cardamines, Rumicia phlaeas, Polyommatus icarus, Celastrina argiolus and Coenonympha pamphilus.

On June 4th I went down to one of my favourite collecting grounds, the Warren at Folkestone, chiefly for the first brood of Agriades thetis (adonis). The weather was brilliant until Folkestone was reached, when unfortunately the climatic conditions changed; the sky was very heavy and overeast by the time I arrived on the Warren. This was very disappointing, so there was nothing for it but to beat and search grass stems and bushes. A few A. thetis (adonis) were taken at rest on grass stems, and I was very fortunate to include amongst them a perfect ab. ceronus. Polyommatus icarus was common enough. Beating rough herbage only produced a few common insects, such as Ematurga atomaria, Coremia ferrugata, Camptogramma bilineata, and Xanthorhov montanata, etc., in spite of

much hard work.

On my return to Abertillery, further visits were paid to Port-llanfraith, on June 14th and 21st. Insects of a common order were abundant, especially Brenthis selene, which swarmed here. The most interesting insect taken was an Acronicta leporina var. bradyporina, which was found at rest on a birch trunk. This is the first example of this species I have seen here. A few Conchylis smeathmanniana and other Tortrices were beaten out of rushes, and one or two beautiful Mesoleuca albicillata were found at rest on rocks.

"Dusking" at Abertillery during June was very productive as far common Noctuae and Geometridae were concerned, but nothing of any great interest was noted; the best thing was a fine Theretra (Chaerocampa) porcellus, only the second noticed in this district, which was netted on the 29th as it fed at the flowers of ragged-robin. Several Scoparia cembrae, an insect I have not previously taken here, were netted at dusk as they flew over nettles and other rough herbage. very perfect melanic Boarmia gemmaria came to the light in my dining-room on the 17th; this usually common species is quite scarce The Plusias were scarce this year; a few Plusia pulchrina, P. festucae, and P. gamma were netted at dusk. P. festucae, usually the most abundant species, was particularly scarce, not more than two or three were seen altogether, whilst P. chrysitis was not noticed at all. Hepialus humuli is usually very common where it occurs, but I have never seen it in such numbers as this season. There were scores on the wing at once in every field. "Sugaring" during June produced insects in fair numbers, but of a common order, especially Miana

fasciuncula and M. strigilis, and a few nice Lencania comma and L. litharyyria. I find the latter insect comes more freely to sugared

thistle heads than anything else.

On June 27th I paid a flying visit to Weston-super-Mare, in the hopes of taking Asthena blomeri. This pretty little Geometer was not uncommon in the Kewstoke woods, but is not easily taken. They rest rather high up on tree trunks, principally wych-elm and ash, and are very skittish, taking flight before one can reach them. By dint of hard work I managed to get twenty good examples. Abraxas sylvata swarmed everywhere, especially amongst ivy. Several lodis lactearia, Hemithea striyata, Acidalia aversata, Semiothisa liturata, and Zanclognatha grisealis were beaten out of rough herbage. Butterflies were rather scarce, the most common species was Pararge aegeria, which at

this date was decidedly passé.

Owing to pressure of business I was unable to do much collecting during July. I do not find anything of particular interest in my notes of the little I was able to do. On the 11th my wife and I had an enjoyable day in the Forest of Dean. We had visions of taking our latest addition to the British list, riz., Araschnia levana, a single example of which was taken near the Forest of Dean last year. We failed to find any trace of that butterfly, although several have been taken at Symonds Yat and other points of the Forest this season. We were too early in any case. I believe this is a very local species even on the Continent. Butterflies, and especially Argynnis adippe, were abundant. Several scores of A. adippe could have been taken had we wanted them. Pryas paphia was common, and three Argynnis aglaia were netted as they flew along a railway bank. The three Pierids, Aphantopus hyperantus and Adopaea flara (thaumas) were common, and I was interested to find several Melanargia galatea on the railway banks. I have always associated this local species more or less with the sea coast. I was pleased to take a few Anthrocera (Zygaena) lonicerae, as they lazily flew from flower to flower, as I have not hitherto seen this burnet on the wing. A few "plumes" were beaten out of rough herbage, and a large but very worn ? Boarmia roboraria was found at rest on a pine trunk. Odezia atra was common, but worn. Geometers, on the whole, were scarce. Although insects have been more abundant this year than usual I notice it has only been amongst the commonest species, at least so far as this district is concerned.

On August 1st I took my annual holiday, going with my wife and family to Lymington, Hampshire. This place was chosen as I thought it would be a convenient centre both for the Isle of Wight and the New Forest. I am very sorry now we did not stick to our original intention of staying at Brockenhurst, as we did last year. On August 2nd Germany declared war on Russia, and after that everything was chaos as far as railway travelling was concerned. Our proposed trips to the Isle of Wight were stopped altogether, and getting about anywhere was difficult. There was nothing for it but to make the best of

things and to collect when and where we could.

Lymington itself appeared to be a poor locality for Lepidoptera; butterflies were scarce in numbers and species, a few "whites," Polyommatus icarus, Celastrina argiolus, the commonest of the "blues," Rumicia (Chrysophanus) phlacas, Coenonympha pamphilus, Epinephele tithonus and Pararge megaera were noticed. Moths were fairly common

round the electric lamps at night. Among others we took the following at light, Porthesia similis, Hydraecia nicitians (common), Acidalia bisetata, Crocallis elinguaria, Pionea forficalis (common), Eupithecia oblongata, E. assimilata and E. vulyata, Bryophila perla (abundant), Apamea secalis (common), Cidaria truncata, Miana bicoloria, Thamnonoma vanaria, Boarmia genmaria, Lithosia lurideola, Triphaena ianthina, Homoeosoma nebulella, and a few Tortrices. A fine Mormo maura was taken at rest under a window-sill.

Several visits were paid to Stubby and other parts of the New Forest. I was anxious to get Ruralis (Zephyrus) betalae, but failed to find this species, although a considerable amount of time was devoted to the search. Only one Bithys quercus was seen, flying high up round an oak.

Butterflies were fairly plentiful in the forest; by far the commonest species at this date was Pararge aggeria, in beautifully fresh condition, one or two worn Argynnis adippe were noticed, Argynnis paphia was common but very worn, a fair ab. calezina was taken at Stubby on the The second brood Pieris brassicae was abundant, and towards the middle of the month Goneptery, rhamni put in an appearance in large numbers, one or two examples were taken with numerous spots and blotches of rust colour distributed over the wings, and another example had the costal margin of the forewings heavily marked with rust colour. Over twenty of these butterflies were counted in a small space of about 30 square yards at the same time. Celastrina argiolus was common wherever there was holly. I do not remember ever seeing this blue so abundant as it has been this year. At Brockenhurst Heath Satyrus semele was swarming, and in fine fresh condition. Pararge megaera was not uncommon, and Coenonympha pamphilus as usual swarmed everywhere. Polyommatus icarus was fairly common, and a single ? Plebeius argus (aegon) in very fresh condition was taken on Rhinefield Heath. Vanessa io and Aglais articae were common. Pyrameis atalanta was rather scarce. Eugonia polychloros was not seen, although a sharp look out was kept for this butterfly. A few very dilapidated Limenitis sybilla were fluttering feebly along the glades. We did not see Apatura iris, but we heard that one or two had been taken. I was told by other collectors we met that iris has been very scarce in the Forest this year.

We took a let of sugaring mixture down with us but were unable to use it, consequently the only moths we could obtain were by beating and searching. These included, amongst others, Mesoleuca albicillata, Euchotricha planmealis (common), Ortholitha limitata, Pyrausta purpuralis and P. sanguinalis, Acidalia arersata and A. bisetata, a fine fresh Cleora jubata taken at rest on a large whitethorn trunk, Crocallis elinguaria, Eupithecia vulgata and E. nanata, a fine melanic Boarmia abietaria, beaten out of a fir tree, and a good many Tortrices and

Scoparia and Eudoria.

I was anxious to get a good series of Adopaea acteon, so several visits were paid to Swanage. I had heard that at one or two places near Swanage this species swarmed, the exact localities were kept more or less secret. By devoting several hours to close searching, and walking several miles over rough ground, I was at last rewarded by finding one spot where this local skipper occurred in hundreds. In a very short time I got as many as I wanted. Acteon simply swarmed

here. I had as many as six in my net at a time. In spite of its quick flight this insect is easily taken. It is exceedingly local but very abundant where it occurs. I found a second locality a few days later where it was almost equally abundant. At the beginning of August acteon was in fine fresh condition; it very soon gets worn, and really good cabinet specimens require to be taken within a day or so of emergence. The "blues" were common in certain spots, I'. icarus being by far the most abundant. A curious ab. of this species was taken on the 13th; the spots were normal on the left wings, but were altogether missing on the upperside of the right wings, on the underside the spots were quite normal in the left wing, but were streaked to a marked degree on the right wings, and especially so in the forewing. The specimen was a 2 in fair condition. Plebeins argus was fairly common. A good many Agriades coridon were netted in the hopes of ab. fowleri, but without success, although a few minor varieties were taken. A single & Agriades thetis (adonis) was netted on the 13th, the only example noticed, and one or two very worn ('upido minima were seen on the 14th. Other butterflies noticed at Swanage were Pavarge megaera, Epinephele tithonus, Melanaryia galatea, Satyrus semele (common), Vanessa io, Aglais urticae, Pyrameis cardni and P. atalanta, Coenonympha pamphilus and Rumicia phlacas. Amongst the moths Guophos obscurata fairly commonly on bare chalky patches, a few Aspilates gilvaria were beaten out of rough herbage, Pyrausta purpuralis was very common, with other small fry, amongst the short herbage on top of the cliffs.

We returned back to Abertillery on August 15th, bringing home about 600 insects, which kept me busy setting for a week or two. Since August I have been unable to do any collecting. Throughout September Eudoria (Scoparia) angustea occurred at light in extraordinary numbers, hundreds could have been taken had one wanted them. This local Endoria (Scoparia) is common enough here as a rule, but I have never before seen it in such profusion. Taken on the whole, this has been a fairly good year in the Abertillery district. I have taken one or two species which rarely occur here, and have been able to add two new and interesting species to our local list, riz.,

Aeronieta leporina and Scoparia cembrae.

# A month amongst Spanish Butterflies.

By JAMES A. SIMES, F.E.S.

The account published by Mr. W. G. Sheldon, F.E.S., of an expedition undertaken by himself and Mr. A. H. Jones, F.E.S., in May and June, 1913, to the Albarracin Sierras (Entom., vol. xlv., p. 283, and vol. xlvi.), revived a desire which I had long felt to visit Spain armed with a butterfly net. As circumstances did not seem to interpose any obstacle to the realisation of this desire during the season of 1914, plans for an expedition speedily began to assume a definite shape; and finding that Messrs. T. F. P. Hoar, F.E.S., and A. C. Smith, F.E.S., were bent on a similar undertaking, I concluded arrangements with them for a joint campaign. Various itineraries were discussed, including some which would have left little of the Iberian peninsula unexplored: but we eventually abandoned such ambitious projects as outside the realm of practical politics, and came

to the conclusion that, for a first trip, we could not do better than

follow in the footsteps of Messrs. Sheldon and Jones.

We left England on May 20th, and travelled direct to Barcelona. We broke the journey here for a few hours to make an expedition to Tibidabo. It was a glorious day, and notwithstanding that our quarry was not over-plentiful, the memory of the hours spent on that lovely hillside will not soon fade. The first hour revealed nothing more exciting than an odd Pararge megaera or two, a very worn Coenonympha pamphilus, a few hibernated Pyrameis cardui, and a number of Plusia yamma; but soon afterwards we had a vision of a fine Iphiclides podalirius, shortly followed by an unmistakable Pavilio machaon. Matters improved when we got out on to the open hillside amongst the scrub. Here we found that darkest of "burnets" Anthrocera larandulae in some numbers, a few Melanargia syllius, mostly worn, numbers of Celastrina argiolus, and, to our delight, Melitaea aurinia Of the latter, both sexes were in evidence in first-rate condition. By dint of steady work each of us managed to pick up a short series of excellent specimens. An odd specimen or two of Glaucopsyche (Nomiades) cyllarus and Epinephele pasiphäe completed our bag. So we descended to the valley, rolled our nets, and took our places on the top of the electric car which was to take us back to Barcelona. Hardly had we taken our seats when a big dark butterfly floated lazily over our heads, so low that had any one of us had a net handy the insect must have been captured. As it was the butterfly pursued its leisurely way unmolested. It was Charaxes jasins!

On the following morning we left for the south. We broke the journey for a few hours at Valencia—which does not strike one as being of much interest as an entomological centre—then proceeded to Teruel, where we stayed the night at the station restaurant and on the morrow embarked in the crazy mule-diligence for Albarracin, where, after many adventures, we arrived in the afternoon. We had arranged for quarters at the Hospederia Narro, where our predecessors had stayed; and we can only say that, after the dark hints we had heard in London about life in small country hotels in Spain, we were agreeably surprised at the cleanliness and comfort which we found at Señor Narro's

house.

Mr. Sheldon's account of the Albarracin district is so complete and admirable that no remarks on the subject from me are called for. His notes, coupled with some additional hints and directions which were kindly supplied to us by him and his companion, Mr. Jones, were of the utmost use to us in our wanderings, and the success we met with we owe in large measure to the help ungrudgingly given us by those two gentlemen. Our hunting was done for the most part over the ground mapped out by them, our principal locality being the sainfoin fields some two or three kilometres below Albarracin and the gorges on the left bank of the Guadalaviar. The sainfoin fields were not, however, so productive at the time of our visit as they were in the previous year; but this was probably due to the fact that we were a fortnight later and the flowers were long past their best. They were most attractive on our first morning and steadily declined in their yield as the days went by. The weather, too, was distinctly less favourable to us. There were few days when there was unbroken sunshine; and on most mornings we set out under a cloudy sky, wondering if the

weather was going to clear sufficiently for insects to fly. Friend Hoar usually sallied forth wearing a warm British overcoat, albeit he carried—somewhat pessimistically—a butterfly net ready for action. I append a few notes on the individual species met with in the hope that, taken in conjunction with those published by Mr. Sheldon, they may be of assistance to future visitors.

Iphiclides podalirius. A few only. First seen on May 29th.

Papilio machaon. Very scarce. Not more than six examples seen. Thais rumina. Practically over. One or two passable examples on May 30th. The larvæ were very numerous on the Aristolochia and on the stones in the vicinity. They seem fond of resting on these stones, often at a considerable distance from the plant, when not actually feeding, and I have no doubt that they usually pupate on them. Probably the stones are more comfortable than the plant because they retain the heat better.

Aporia cratacgi. Fine large examples. Not common. First seen

on May 30th.

Pieris brassicae and P. rapae. Abundant.

P. napi was not met with.

Pontia daplidice var. raphani (gen. aest.) Abundant from May 26th.

Anthocharis belia. A few in cornfields. Very worn.

Enchloë cardamines. Generally common from May 28th.

E. enphenoides. First seen on May 31st and afterwards generally abundant. The females generally have much less orange than those which I took in the Estérel some years ago. I took one male, flying strongly, which had the left hindwing of a very small size, being scarcely larger than that of C, pamphilus. The malformation is the more noticeable as the insect is larger than the average.

Zegris enpheme var. meridionalis. We were almost too late for this species and only managed to obtain about three or four each, and these were the worse for wear. Only one female was secured and this was unfortunately killed before its captor realised its sex. It is very strong

on the wing and difficult to catch.

Leptosia sinapis. A few at La Losilla from June 4th onwards.

Colias hyale. Uncommon and worn.

C. cdusa. Common. Fine fresh examples from May 28th onwards. Ab. pallida was more frequent than I have found it elsewhere.

Gonepteryx (Rhodocera) rhamni and G. (R.) cleopatra. Hibernated examples only. They are very fond of a shrub which has scented blossoms resembling those of Jasminum nudiflorum.

Klugia (Thecla) spini. One worn example on June 10th.

Callophrys rubi. Very worn. Both upper and undersides were too rubbed to permit of any opinion as to the form to which they should be ascribed.

Loweia (Chrysophanus) alciphron var. gordins. One female in a meadow by the river about three miles above Albarracin on June 8th.

Rumicia (C.) phlaeas. Uncommon and typical.

Lampides boctions. Getting over at the time of our arrival, the few good examples taken being met with in sainfoin fields.

Scolitantides orion. Not common. First seen May 27th. They

were mostly of the nigra form. One was taken at La Losilla.

S. baton var. panoptes. Practically over. Only worn examples were seen.

Plebeius sephyrus var. hesperica. First met with on May 30th, when five males and one female were taken on the ground indicated by Mr. Sheldon. After this it was met with regularly in this locality, though not in any great numbers on any one day. In addition to the plateau near the road, where Mr. Sheldon discovered it, we found it more than a mile up the gorge, and on June 8th I was very pleased to come across five examples by the roadside about 3½ miles above Albarracin. I could not discover the foodplant in the latter locality, but no doubt it is there. Like the var. lycidas, it seems to emerge over a long period, and we found perfectly fresh examples right up to the middle of June, when we left.

Ariria medon (astrarche). Uncommon. First seen May 30th.

All examples of the calida form.

Polyoumatus icarus. Scarce and worn.

Agriades thersites. Numerous in the sainfoin fields, but not met with elsewhere. It was well out at the time of our arrival. In one of my males the spotting on the underside is almost obsolete. the females met with were of the ab. azagra, Sheldon, form.

Polyommatus escheri. From June 9th onwards. Males only were

seen, and these are all typical. Not common.

Agriades thetis (bellargus). Common from May 30th. A fine

large race.

Polyommatus hylas var. nivescens. First seen on May 30th, when one male and one female were taken. It was never abundant during our stay, my maximum take being three in one morning. It was mostly met with in the neighbourhood of Santa Croche, but we found it to be widely spread.

Celastrina argiolus. A few only in the vicinity of the town.

From May 26th.

Cupido sebrus. A fine large form, abundant from May 28th. Fond of drinking on the wet mud at the side of the river on hot days. Rests in large numbers on shrubs in dried up watercourses, especially on Artemisia fruticosa.

Polyommatus semiargus. Very rare. Only two males seen.

Glaucopsyche (Nomiades) cyllarus. Fairly frequent, and of fine size. Continued fresh throughout our stay. First seen on May 27th.

Eugonia polychloros. Larvæ in great abundance on elms by the

roadside above the town.

Aglais urticar. A few larve were found which produced the form referred to and named by Mr. Sheldon (var. ternelensis). The image was first seen on May 29th, when two fresh examples were taken.

Pyrameis cardui. Abundant, but mostly worn.

P. atalanta. A few only, worn.

Melitaea desfontainii. Abundant in the gorge below Santa Croche. First taken on May 30th. The males frequent the hot gorges, but the females do not often visit these, preferring the open hillsides.

M. phoebe var. occitanica. A few from May 28th onwards.

examples taken were not of a very extreme occitanica type.

M. deione. Common on May 30th and for about ten days afterwards, when it completely disappeared.

1ssoria lathonia. Very common.

Argynnis aylaia. Not properly out at the time of our departure. Two examples only taken.

A. niobe var. eris. One only.

Dryas pandora. First seen on June 8th. A fine large form.

Melanargia lachesis. This species was not out at the time of our visit. I did not take it at all. I saw it in numbers on the railway banks about twenty miles north of Barcelona, when homeward bound in the express for Port Bou.

M. ines. First seen on June 8th. We took very few owing to

unfavourable weather.

Erebia erias. One example at La Losilla on June 12th.

Pararge maera var. adrasta. Not uncommon, but usually worn.

P. megaera. Frequent.

Epinephele pasiphäe. Common from May 29th onwards.

Coenonympha dorus. Two males on June 9th.

C. iphioides. First appeared on June 12th when we took three examples. Unfavourable weather prevented additions to the series.

C. pamphilus. Not common and very worn.

Erynnis (Carcharodus) alceae. Not uncommon; about half-a-dozen were taken.

E. (C.) altheae. Two examples on June 8th. E. (C.) laraterae. Frequent near Santa Croche.

Powellia sao. Not very common.

Hesperia carthami. Very numerous, especially near Santa Croche

from May 31st onwards.

Of the other black and white *Hesperiidae* I cannot speak with any degree of certainty, as my specimens have not been subjected to the only reliable test of identity.

Nisoniades tages. A few of the cervantes form from May 26th

onwards.

Adopaea plara. Not common from May 31st onwards.

Amongst the Heterocera the only species not met with by Mr. Sheldon, which we came across, were Saturnia pyri, Dicranura rinula, and Trochilium apiforme. The latter was discovered on the poplar trunks on two or three occasions about 9 a.m. It had evidently just emerged.

The very few Geometridae taken have been handed over to Mr.

Prout for identification.

In a district new to all of us there were of course numerous natural objects of interest other than entomological ones. It was a treat to see for the first time a pair of vultures poised high over the sierras, and on another occasion to catch a glimpse of a pair of eagles—I believe, Bonelli's. Raptores of smaller species were fairly numerous, but I fear I am not ornithologist enough to hazard a guess at their identity. My notes record numbers of the little owl—a species which was generally observed on the top of a telegraph pole, from which it flew off as one approached, to take up a similar position on the next. Of the small perching birds no one could fail to remark the numbers of nightingales, which sang incessantly day and night in the bushes along the course of the Guadalaviar, and the great abundance and variability of the wheatear. One example of the latter species had all the grey parts replaced by a yellow-brown tint.

On one occasion as we rounded a bend in the road near Santa Croche a fellow passenger in the diligence excitedly exclaimed "Lobo!" and looking in the direction indicated I was just in time to

catch sight of swishing bushes and some gray-brown fur as some animal dived into a cavern in the cliff face. It may have been a wolf, as the man said, but I could not swear to it.

Of snakes, I am thankful to say, I saw none. The only reptilian met with which interested me was the fine big green lizard (*Lacerta* 

ciridis), which we came across everywhere.

Trout are common in the river, but they are mostly small, and a small crayfish is also abundant. When alarmed, the latter darts rapidly backwards, and is lost to sight in the cloud of mud disturbed

by its motion.

Mr. Sheldon has described some of the most interesting plants of the neighbourhood, one of which is certainly the glorious blue Linum which is to be met with everywhere on the limestone rocks. The Savin Tree, which is frequent on the same formation, interested me very much. The adult tree strongly suggests a cypress, and it is only when ones comes across a sapling that the characteristic juniper foliage is noticed. A magnificent wild rose with huge, rich yellow blossoms was discovered in one locality near the town. The big asphodels were very common on the hillside, but I do not think they are of the same species as that which I find so abundant in Southern Italy. The root of the latter is a huge bulb like an onion, whereas the Albarracin asphodel has a root consisting of a mass of tubers something like that of our garden plant Incarrillea delarayi. Oleanders do not occur so high up in the sierra as Albarracin; but we saw masses of them in full bloom in dry river-beds between Valencia and Barcelona.

It only remains for me to place on record our indebtedness to Señor Don Mariano Rabinad, the Secretary to the Ayuntamiento of Albarracin, to whose kindness much of the success of our expedition was due. It was a matter of great regret to us that during the greater part of our stay Señor Rabinad was obliged, by official duties, to remain at

Madrid.

# Dysstroma concinnata, Steph. (With three plates.)

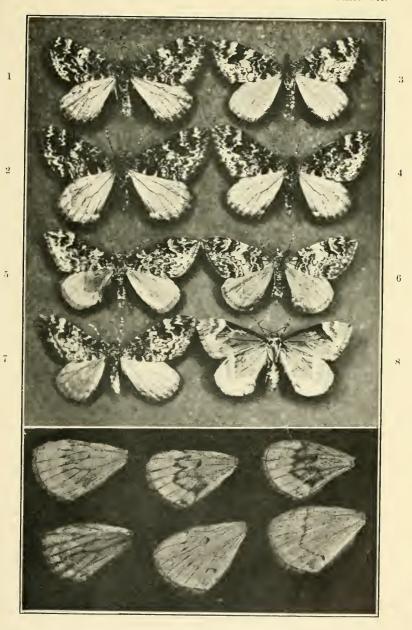
By E. A. COCKAYNE, M.A., M.D., F.E.S.

In a paper read before the City of London Entomological Society, Mr. Prout gave his reasons for believing Dysstroma concinnata to be a species distinct from D. truncata and D. citrata (immanata). These were based on the external appearances and genitalia of the imago, and on differences in habits, time of appearance and distribution. All these species inhabit the Island of Arran, a fact which proves that these differences are not dependent on local climate or isolation. I will summarise the points which Mr. Prout brings out so clearly.

Dysstroma truncata on Arran is double-brooded, appearing in May and June and again in August and September; D. concinnata is single-brooded, appearing in July or August or even occasionally at the end of June; D. truncata inhabits the low ground, and the larva is a general feeder; D. concinnata is confined to the high ground and the larva feeds on heather, Calluna rulyaris. It must be admitted that larvae of both the other species are sometimes seen feeding on heather, but in my experience they prefer other plants, even on the open moors. D. citrata passes the winter as an egg, D. truncata as a larva; the hibernating stage of D. concinnata is unknown. D. concinnata rests on

Photo, E. A. Cockayne,

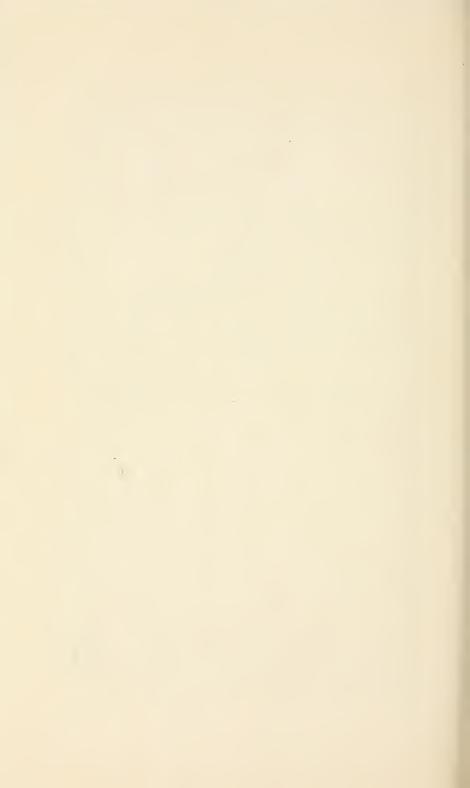
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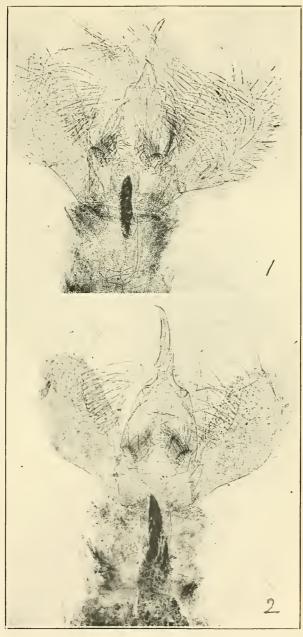
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The Entomologist's Record, 1915.

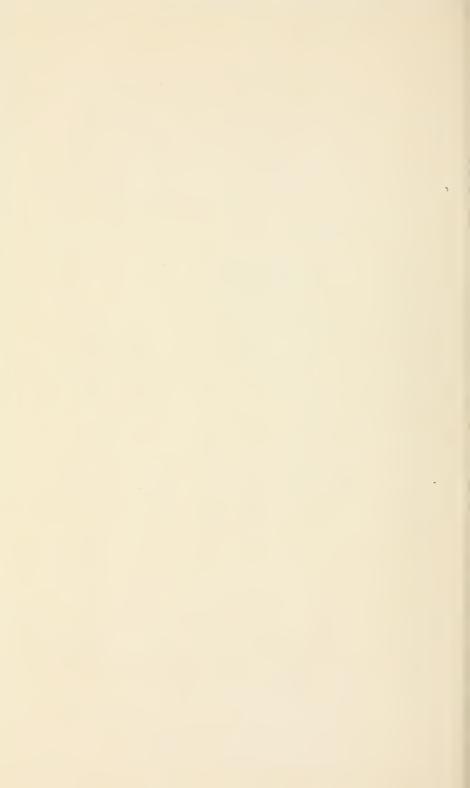
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Vol. XXVII. Plate VIII.



Photo, E. A. Cockayne,
Male Genitalia of; 1, Dysstroma concinnata; 2, D. truncata.
The Entomologist's Record, 1915.



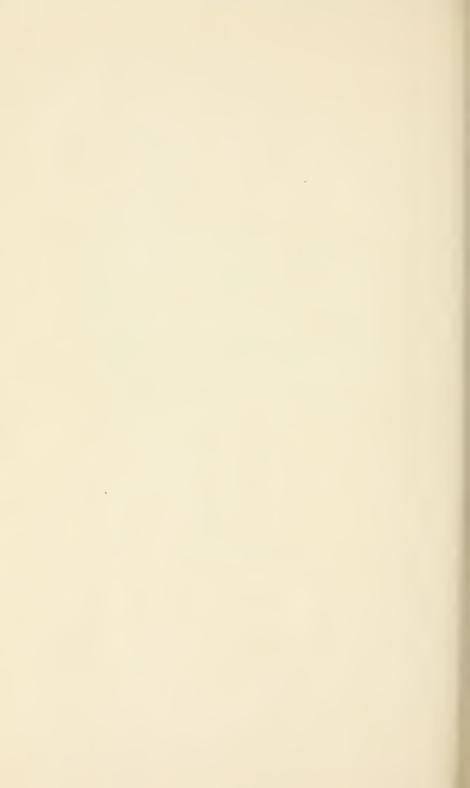
Vol. XXVII. Plate IX.



Photo, E. A. Cockayne.

MALE GENITALIA OF: 3, DYSSTROMA CITRATA.

The Entomologist's Record, 1915.



granite boulders, D. truncata and D. citrata prefer the branches and trunks of trees.

Concinuata is very variable in colouring, but has a different facies from either trancata or citrata, a difference better brought out by long series than by isolated specimens.

It agrees with truncata in shape. The wings lack the narrowness

and slight hardness of surface seen in citrata.

The shape of the outermost line of the broad central band is a fairly reliable feature when large numbers are examined, and in this too it agrees with *trancata* rather than with *citrata*. In the latter this tends to make a smooth sweep from the costa to a projection outwards, which is usually double-toothed and sometimes deeply indented.

Truncata and concinuata generally show one or even two sharp projections near the costa, and the large elongation outwards shows

three teeth, which are often ill-defined.

The dappled appearance of the central area and the well-marked pale submarginal spots on the hindwings are usually considered the most characteristic features of concinuata. In a considerable number of individuals which I have examined they were always present. Both features are often found in Shetland citrata (var. pythonissata, Millière), the pale submarginal row of spots in the hindwings are sometimes well developed in truncata, and exceptionally the central area in this species may be as dappled as that of concinuata. The central area in some specimens of concinuata is greatly suffused with black or chesnut scales, but there is never the uniformity of colouring which is the rule in similarly coloured truncata.

The line on the underside of the hindwing is shaped like that of truncata, with a deep indentation between veins 5 and 6, but the line is very thick. In truncata this line is usually quite thin, especially in the lighter Scottish forms, and in the darker ones there is a general suffusion of the whole wing with dark scales, which makes it even less conspicuous. In the plate the indentation in truncata is not suffi-

ciently clear.

Thickening of the line is rarely met with in truncata, but is constant in concinnata, and the thick indented line appears to me the single character which is most reliable in differentiating it from its allies.

In the most melanic concinnata there is no general darkening of the underside of the hindwing, though there may be a good deal of

black scaling in the basal area.

The shape of the line in *citrata* is usually quite distinct, being sharply angled, and without the indentation. The difference is well shown in the plate. (Plt. vii.)

The central spot in cincinnata is, on the average, larger than in

the other species, and the wing surface is more glistening.

In such protean species where variation runs on such closely parallel lines, too much reliance must not be placed on a single point; all must be considered to arrive at a correct determination.

I have failed to find any constant structural characters in antennæ or elsewhere except in the genitalia, by which I can separate one species from the others.

In outline, markings and colouring, the Arran species comes nearer

to truncata than to citrata.

With regard to the male genitalia, Mr. Prout published a note in this paper stating on the authority of Mr. Pierce that in *concinnata* the spines on the ædœagus are intermediate between those of the allied species and nearer to those of *citrata*. In spite of this it appears to me that in the general appearance and in individual details alike truncata and concinnata are extremely close, whilst *citrata* is somewhat removed from either.

In the case of the redeagus the total width and length is the same in truncata and concinnata; in citrata it is much longer and about double the width. The area covered by spines is also the same in length and width in these two species, but much broader and longer in citrata. In fact, so great is this difference that mounted specimens of the genitalia of this species can be recognised readily with the naked cyc from those of either of the other two.

The individual spines vary considerably in length and breadth in all three species, and those of truncata cannot be distinguished from those of concinnata, but those of citrata are much longer and broader (about two-thirds larger). The total number is about the same in all. The valve in all three species differ a little. They are of equal length in truncata and concinnata, and obviously shorter in citrata. They widen out more abruptly in concinnata and reach a greater maximum width than in truncata. Thus the total area of the valva is greatest in concinnata and least in citrata. The valva of citrata has a straighter inner edge and the smooth area covered by long straight hairs (costa of Pierce) is longer than in the other two. In concinnata the costa is broader than in truncata, and the hairs on the anellus seem to be a little coarser.

The total length of the tegumen is equal in truncata and concinnata, shorter in citrata, it is also narrower throughout in the last-named. The uncus also is shorter and narrower in citrata, and is different in shape. It tapers much less gradually and the extreme tip is shorter and narrower than in either concinnata or truncata, which in this respect resemble one another closely.

The females of all three have a rather elaborate genital apparatus, but, as in the case with the male armature, the resemblance is closest

between truncata and concinnata.

The signum is scobinate in all three species, but in these two species the scobinations become smaller towards the middle, leaving a smooth central area. In *citrata* Pierce says the whole is scobinate; there is, however, a very narrow, smooth strip down the centre.

In all three species there is a thickening of the chitin at the neck of the bursa, and on the inner aspect their spines are placed at regular intervals. In *citrata* these are few, and they only occupy a part of the ventral side of the neck. At a rough glance the neck appears to be spineless.

In the other two species they extend almost all the way round, but the band covered with spines in *concinnata* is nearly double the width

of that in truncata.

Thus in every point of external appearance and in the details of internal structure *concinnata* is seen to approach more closely to truncata than to citrata.

The geographical distribution of concinnata is a most interesting one. It is quite common in the island of Arran and has been recorded

from the mainland, but these records are old and have never been confirmed. A Dysstroma which I took on July 5th at Tongue in Sutherland was shown at the City of London Entomological Society and doubtfully assigned to this species. It is, however, truncata. Placed with a long series of true concinnata it has a slightly different general appearance and diverges in details, such as the narrowness of the line on the underside of the hindwing (see Plt. vii., fig. 7).

The genitalia are those of truncata. The Hebridean specimens, too, are said to be truncata, so that Arran is the only certain Scottish locality and until recently was the only known British locality. But at the pocket-box exhibition of the South London Natural History Society last year Captain Gwatkin-Williams, R.N., showed some Irish Lepidoptera, amongst which were two Dysstromas taken by him on July 14th, 1912. I suggested at the time that these were concinnata and he most kindly lent them to me for further examination. Both are females. Except that they are slightly brighter in colour than the average Arran specimens and have a faint yellowish tinge on the underside they agree with them in all respects. The thick black line on the underside of the hindwings is specially well-marked. They were taken at dusk up on a bare heather-clad hill-side in Achil Island off Co. Mayo on the west coast of Ireland, a locality in many ways resembling the Arran one.

Captain Gwatkin-Williams unfortunately did not realise the interest of the capture until it was too late to pursue his investigations further. But we shall probably find the species elsewhere on the hills

of this little known coast.

Outside these two restricted localities in Great Britain the species has not been met with.

I cannot help thinking, however, that if entomologists who visit Norway will look in suitable localities they will find it.

Nearly all our insects with a similar distribution have a Scan-

dinavian origin.

Stephens, J. F. ... Illus. Brit. Ent., Hanst., 1831, vol. iii., p. 229.

Ent. Rec., 1908, vol. xx., p. 143. PROUT, L. B. . . .

Trans, City of Lond. Ent. and Nat. Hist. Soc., 1908, vol. xviii., p. 52.

#### EXPLANATION OF PLATES.

#### PLATE VII.

Dysstroma concinnata from Achil Island. Figs. 1 & 2. ,, 3 & 4. from Arran Island. (Fig. 3 unusually pale).

D. citrata (immanata) var. pythonissata from Shetlands. 5 & 6.

7. D. truncata from Tongue. D. citrata var. pythonissata (underside). 8. Underside hindwings of D. concinnata, pale, average and

9, 10 & 11. melanic, respectively.

12. Upperside hindwing of D. concinnata. 13. Underside hindwing of D. truncata (Rannoch). D. citrata (Aberdeenshire). 14.

#### PLATE VIII.

Male Genitalia of D. concinnata and D. truncata.

#### PLATE IX.

Male Genitalia of D. citrata (immanata).

N.B.—The Acdwagus is somewhat bent in D. citrata, and all are taken with equal magnification.

## SCIENTIFIC NOTES AND OBSERVATIONS.

Earliest stages of Coleophora Juncicolella, Stt.—The ovum is a low cone with several ribs, very similar to the ovum of C. laricella. It is laid on the lower surface of a leaf of Calluna vulgaris, almost at the base and half-way between the mid-rib and the margin, so that it is partly hidden by the leaf growing immediately below on the same stem. The larva on hatching passes through the base of the egg-shell into the leaf, which it mines. It then probably changes its skin. Whether this is so or not, it enters a second leaf without forming a case. As far as I was able to ascertain it forms its first case by cutting off a portion from a third leaf. The first case is formed of the upper three-quarters of a leaf which the larva has previously mined, and is of a pale fawn colour. I have always considered C. laricella and this species as closely allied, but there is one great difference in the larva, the former possesses four pairs of abdominal prolegs, while C. juncicolella only has three pairs.—Alfred Sich.

## 12 OTES ON COLLECTING, Etc.

Collecting Records.—[I think the following two lists of captures should be put on record, more for the sake of the localities, than for any rarity in the insects themselves. Mr. Meyrick and Mr. Durrant have been good enough to identify some Microlepidoptera. These species I have marked with an asterisk (*).—P.A.B.]

I. MICROLEPIDOPTERA OF NORWAY.—In the Ent. Record, xxvi., p. 152 (1914) my brother and I published an account of two Norwegian localities. I am now in a position to give a list of the Microlepidoptera which we took there. As the larger paper shows, we were at Lesje July 25th-30th, and in the Sura valley August 1st-26th, 1913, and

again at Lesje August 29th.

Pyransta purpuralis (forewing band divided), Lesje; Herbula cespitalis, Sura; Fredericina calodactyla (zetterstedtii), and Adkinia bipunctidactyla, both the above were in worn condition early in August on the Sura; Crambus culmellus, C. pratellus both abundant on Sura and at Lesje; C. margaritellus, Sura; Peronea schalleriana, Sura, common; P. aspersana, Sura; Teras contaminana, Sura; Sericoris lacunana, Sura; *Argyroploce bipunctana, Lesje; Mixodia schulziana, Lesje, 3,500 ft.; *Euchromia arbutella, Lesje, in bad condition; Grapholitha ramella, type with white ground, Sura; *G. naevana var. geminana, Sura; G. penkleriana, common, Lesje and Sura; *Phloedes crenana, Sura; Hupermecia cruciana, Lesje and Sura, a very dark red fuscous form; Paedisca solandriana, not at all abundant, Sura; *Encosma biscutana, August 29th, Lesje, common (the species is like a very unicolorous variety of E. similana); Pamplusia mercuriana, Sura, 3,000 feet, mid-August common; *Catoptria hypericana, Sura; Aphelia osseana, Sura and Lesje, compon; Swammerdammia conspersella, Lesje; *Depressaria badiella, Sura; *D. pulcherrimella, Sura; D. (Pinaris) applana, Sura; *D. (P.) hepatariella, Sura; *Gelechia proximella, bred from birch (Betula), spring of 1914; Argyresthia brockeella, Sura; A. retinella, Sura; Gracilaria elongella, Sura; *Coleophora laricella, Sura; *Simaethis (Allononyma) diana, Sura.

II. FAUNA OF CALDEY ISLAND, PEMBROKESHIRE. — Before the commencement of the war some Cambridge entomologists proposed

to investigate the island of Caldey. I visited it from July 24th to 28th, 1914, and collected rather widely, hoping that my collections might supplement those of others at other seasons. There is now no hope of the investigation being completed and I am publishing this list because Caldey is an interesting locality and seldom visited. Its interest is this, that it is separated from the mainland of Wales by a couple of miles of tide-swept sea, yet it contains many forms of wingless Arthropoda, for instance Platyarthrus, and Campodea and Lithobius, all of which are not only wingless but subterranean. The geologists must decide whether Caldey Isle has been lately connected to the mainland. If it has not, then we must suppose that it has been colonized through the medium of that ancient bone of contention—the floating log. It is clear enough that we must know much more before we can decide for or against these accidents; personally I incline to favour the log.

The isle is less than two miles long, and large parts of it are covered by gorse, bracken and heath vegetation. The cliffs, which are 300 feet high in places, are covered with thrift and many other maritime plants. The isle is inhabited and owned by a Benedictine Brotherhood, who would always be willing to further faunistic researches, and in whose Guest House I was most comfortably

entertained.

LEPIDOPTERA: Pieris brassicae, P. rapae, P. napi, Aglais urticae, one Pararge acgeria, Aphantopus hyperantus, Epinephele jurtina (janira), Polyonmatus icarus, Rumicia phlacas, Sphinx ligustri (bred from larva by Brother Gilbert), Anthrocera filipendulae, generally distributed and not rare even at this early date. I took a 3 with a "Triungulin" larva on its head, and another bearing pollinia which I fancy were

those of Orchis pyramidalis.

Aegeria museaeformis (philanthiformis) (not uncommon on the thrift on the cliffs); Hipocrita jacobacae; Spilosoma menthastri; Hepialus humuli (abundant); II. lupulinus and Dicranura rinula: Notodonta ziczac (larvæ of both these on poplar in the guest-house garden); Xylophasia monoglypha; Mamestra brassicae; Miana fasciuncula (on flower heads of Heracleum); Agrotis exclamationis; Noctua plecta; Hadena oleracea; II, dentina; Cucullia umbratica; Chariclea umbra : Phlogophora meticulosa : Boarmia repandata : Lozogramma petraria : Enpithecia pumilata : Xanthorhoë (Melanippe) fluctuata : Camptogramma bilineata: Scoparia dubitalis (pyralella); S. atomalis: Endotricha flammealis; Eurrhypava urticata; Scopula prunalis; Ebulea sambucalis: Stenia punctalis: Hydrocampa nymphaeata; Crambus hortuellus; C. pratellus; C. perlellus and var. warringtonellus; Homocosoma sinuella; H. nimbella; Phycis ornatella; Gallevia mellonella; Peronea aspersana; Sericoris lacunana; S. urticana; *Grapholitha nigromaculana : Euxanthis angustana : Ephippiphora trigeminana : Dichrorampha petiverella : Catoptria cana : Nanthosetia hamana : Chrosis alcella (tessarana): Plutella erue ferarum (the imagines frequented plants of Reseda after dusk, rather than the various Cruciferous plants); Depressaria costosa; Bryotropha terrella; Atielechia marmorea (beaten from Psamma); Oecophora pseudospretella; Endrosis fenestrella; Tinea misella; *Glyphipteryx fischeriella; Argyresthia nitidella; Colcophora fuscedinella; Elachista cygnipennella and Simaethis fabriciana (o.cyacunthella).

Coleoptera: Determined by Mr. Hugh Scott. Brosens cephalotes, Pterostichus madidus, Itarpalus rujicornis, Meloloutha rulgaris, Ocypus olens, Lacon murinus, Lagria hirta, and Otiorhynchus sulcatus.

ORTHOPTERA: Standerus bicolor.

Diptera: Leptogaster cylindrica, common.

Ants and Myrmecophiles: Determined by Mr. Donisthorpe. Cyphodeirus (Beckia) albinos, in ants' nests; Lasins niger and L. Harus mixed, under a stone; a nest of L. niger with the Isopod Platyarthrus hoffmannseggii and the Acarid Antennophorus foreli. A nest of L. Harus with winged  $\mathfrak P$  and Antennophorus pubescens.

HYMENOPTERA (other than Ants): Determined by Dr. R. C. L. Perkins. Prosopis hyatinata; Colletes fodiens: Andrena gwynana; Bombus terrestris: B. lucorum: B. derhamellus: B. agrorum, and Odynerus

callosus.

APTERA. I. THYSANURA. Campodea (sp.?) and a Machiliid of an undescribed species (fide G. H. Carpenter).

II. Collembola: Sminthurns rividis (determined by Professor G.

H. Carpenter).

CRUSTACEA: Determined by Mr. R. Gurney.

I. Cladocera: Alona rectangula, Ceriodaphnia quadrangula, and Chudorus sphaericus.

II. COPEPODA: Cyclops strenuus and C. serrulatus.—P. A. Buxton (F.E.S.), Fairbill, Tonbridge, Kent.

### **WURRENT NOTES AND SHORT NOTICES.**

The April number of the Canadian Entomologist contains several interesting and generally useful articles. R. C. Treherne contributes notes on the history of the arrival and spread of various insect pests in agriculture in the British Columbia area. Pieris rapae was first seen in 1898 and '9, and in 1902 it had crossed to Vancouver Island. Two dreaded pests are being closely watched in their progress north in the States, viz., the "Colorado Beetle," Leptinotarsa decembineata and the San José Scale, which latter has already once been observed in Canada. The apple moth Carpocapsa (Cydia) pomonella has already appeared in isolated places. And since 1893 the Woolly Aphis Eriosoma lanigera has become a more dreaded pest each year. Further it has been observed that with the breaking up of the land and the cutting down of the forests many insects transfer their attentions to agricultural crops and fruit trees, and often thrive amazingly. Annette F. Braun gives the life-histories, with many references, of a number of North American Tineina hitherto unknown. John H. Lovell gives an account of numerous instances of spiders of the family Thomisidae capturing other insects, and figures a Papilio asterias captured by Misumena vatia and a dragon-fly Celithemis eponina taken by the same species of spider. The victims are usually captured as they sit on the dense flower-heads on which the spiders lark, protected as a rule by their wonderful resemblance to their surroundings when there. Three specimens of the European Praying Mantis (Mantis religiosa) have been recorded from Canada during the past two years, all taken in Ontario.

In the Civil List Pensions published on March 30th of the present year we read, "Mr. Robert Henry Rippon, in consideration of his contributions to natural history, and of his inadequate means of support, £100." Mr. Rippon is the author of Icones Ornithopterorum, a monograph of the Papilionine Tribe Troides of Hübner, or Ornithoptera of Boisdayal, with 104 coloured plates and many figs., 2 vols., folio, 1898-1906. He has also been responsible for the Troides-section of Wytsmann Genera Insectorum, 1902.

We regret to announce that two members of the South London Entomological Society have fallen in action in France. Lieut. W. W. Penn-Gaskell, of the Queen's London Regiment, who was killed on

May 25th, and W. D. H. Gotch.

In the May number of the Ent. Mo. May. Mr. F. W. Edwards announces several species of Diptera new to Britain, and describes one as new to science. Trichonta flavicauda, from Nethy Bridge, taken by D. Sharp in 1908; T. subfusca, from Elgin, taken by T. Jenkinson; T. vernalis, taken by A. Piffard, in Herts; Rhymosia tarnanii, from Cambridge, F. Jenkinson; Exechia liqulata, from Lelant, Cornwall and the New Forest, taken by Col. Yerbury and F. C. Adams; Exmembranacea, from Crowborough, taken by F. Jenkinson; Mycetophila bialorussica, from Elgin, taken by F. Jenkinson; and Culex hortensis, from Elgin, taken by F. Jenkinson, are all new to Britain. While Plastosciara pernitida is described as new to science, from specimens bred from rotten wood at Stanmore Common, in 1914, by K. G. Blair.

Mr. A. Bacot, who has been making investigations on the carrying of disease in Sierra Leone during the past year, is shortly to return to

this country.

The Syllabus of the London Natural History Society has come to hand, and the larger proportion of its arrangements for the coming session deal with Entomology, as did those of its predecessor the City

of London Society.

Mr. R. S. Bagnall, F.L.S., F.E.S., our colleague, is largely responsible for a new venture called the Vasculum, an illustrated quarterly dealing primarily with the Natural History of Northumberland and Durham. The general editor is the Rev. J. E. Hull, of Ninebanks, Northumberland, and in addition are the names of Messrs. G. Bolam, of Alston, Cumberland, and J. W. H. Harrison, of Middlesborough. The last named will no doubt be responsible for the Lepidoptera section, for which he is eminently qualified. Mr. G. Bolam will deal with Onithological records, etc., while Mr. Bagnall will see that the sections devoted to Coleoptera and what are known as "other orders" are adequately dealt with. In the current number a considerable mass of records of all kinds have been collected in the various articles and There are several original articles, and some pages are devoted to educative notes for young naturalists. A new species of Neuroptera is described by Mr. Bagnall from species taken at Newcastle-on-Tyne, in July, 1914. He names it as Conwentzia cryptoneuvis, and states that it is near C. pineticola of Enderlein. May the Vasculum flourish and win its way as the Yorkshire Naturalist has done before it.

We regret to see the announcement of the death of a well-known illustrator of more or less popular natural history books, Mr. Thomas Carreras. Many of his drawings and photographs are to be found in Marvels of the Universe and Insect Life, and he had collaborated with Mr. Edward Step, F.L.S., in many of his undertakings. Quite

recently Mr. Carreras had finished all the outline drawings for Mr. Donisthorpe's forthcoming monograph on British Ants.

## SOCIETIES.

Entomological Society of London.

April 7th, 1915.—Vote of Sympathy.—At the unanimous request of the Council, the Chairman proposed that a letter should be written to the President on behalf of the Society, offering condolences on the sudden death of his father, the late Lord Rothschild; the resolution was unanimously passed, the whole meeting rising in their places.-Election.—Mr. William Carr, B.Sc., Station Road, Bentham, Lancaster, and Dr. A. Eland Shaw, Samarai, British New Guinea, were elected. Algerian Rhopalocera.—The Rev. G. Wheeler exhibited a box of Algerian butterflies, of species treated of by Mons. Ch. Oberthur in the recently published fascicule x. of his Lépidoptérologie Comparée: many of the species were exhibited for the first time in England. New Goliath Beetle.-Mr. O. E. Janson exhibited a new species of Coelorrhina (family Cetoniidae) in which the cephalic male armature usual in this genus was entirely absent, and to which he had given the name mutica. VARIETY OF PALOMENA PRASINA.—Mr. H. Willoughby Ellis exhibited a British variety of the Pentatomid bug Palomena prasina, L., differing from the type in its larger size and dark olive colour. Taken on ivy at Torquay, May 25th, 1907. North American Papilios.—Mr. E. B. Ashby exhibited the following species:—P. turnus, P. rutulus, P. eurymedon, P. troilus, P. asterias, P. brevicanda, etc. Genital Armature of the Male Ant.—Mr. H. St. J. Donisthorpe showed a chart of the names applied to the genital armature of male ants, and read notes. Genital Armature of Aculeate Hymenoptera. —The Rev. F. D. Morice exhibited a series of Lantern-slides to show the structure of the 3 genital armature and the ventral segments adjoining it in various groups of Aculeate Hymenoptera. Paper.— The following paper was read:—"Hymenopterous Parasites bred from the Pupæ of Chortophila brassicae, Bouché, and Acidia heraclei, L.," by J. T. Wadsworth, Research Assistant, Dept. of Entomology, University of Manchester; communicated by Dr. A. D. Imms, D.Sc., B.A., F.L.S., F.E.S.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

April 8th.—DIMORPHIC SPECIES OF LEPIDOPTERA.—Mr. Edwards, the seasonally dimorphic forms of Papilio ajax from North America. Mr. Schmassmann, specimens of Papilio homerus from Jamaica with a p having 3 coloration, and a series of the rare Pierid Hebomoia reepstorfii of various forms from the Andamans. Paper.—Dr. Dixey, F.R.S., read a paper on "Seasonal Dimorphism," and gave many lantern and other illustrations of his remarks.

April 22nd.—New Member.—Mr. T. B. Foster, of Addiscombe, was elected a member. Exhibition.—The evening was devoted to an Exhibition of Orders other than Lepidoptera. Society's Collections.—The Hon. Curator, Mr. West, exhibited eight drawers of the Society's reference collections which had recently been re-arranged, and included the drawer containing the Diptera given by Mr. H. W.

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Andrews. RARE BRITISH COLEOPTERA.—Mr. West also exhibited four drawers of his own collection of Coleoptera, including British examples of Calosoma sycophanta, Carabus auratus, a series of Micraspis 16-mnetata, Dytiscus circumcinetus ? s, with smooth & -like elytra, and a series of forms of Notiophilus 4-punctatus. Exoric COLEOPTERA. - Mr. Stanley Edwards, large and attractive species of exotic Coleoptera. Aberrant forms of F. Auricularia. - Mr. Ashdown, a series of aberrations of the earwig Forticula anricularia, mostly with aberrant size and form of forceps. South American and Trinidad INSECTS.—Mr. W. J. Kaye, numerous large and conspicuous insects obtained by him in South America and Trinidad; Coleoptera, Phasmids, a Mygale, Cordiceps, &c. PINE APHIDS.—Mr. B. Adkin, Examples of Chernes pini, the pine aphis, on Scots pine. A Portugese NEUROPTERON.—Mr. Main, an example of the Neuropteron, Nemoptera coa, brought from Cintra by Mr. Bowman, and living larva of the firefly Luciola italica, from ova obtained by Mr. Blair and himself. Wasps nests in tobacco.—Mr. R. Adkin, the nests of wasps found rolled up in bales of tobacco from the Levant. Sicilian Insects. -Mr. Platt Barrett, various conspicuous insects from Sicily and South Africa: Mantis, ant-lion, locusts, etc. A number of non-entomological exhibits were also shown.

May 13th.—Aberrations of British Lepidoptera.—Mr. Leeds exhibited aberrations of Polyommatus icarus including ab. obsoletu, an asymmetrical specimen near obsoleta, a chocolate banded underside, and a ? streaked with blue; of Agriades thetis including a ? without orange in margin and bluish clouded, & s with aberrant eye-spots below, etc.; of A. coridon including dark suffused underside, slaty suffused below, 9s with khaki streaks above, and ab. semisyngrapha; of Coenonympha pamphilus including dark suffused below, and an underside with additional spotting; of Pararge aegeria, the British form egerides and Cornish forms much like the S. European form aegeria; of Pieris brassicae a & with a pale blue tinge throughout. Hybrid B. HIRTARIA X N. LAPPONARIA.—Mr. Adkin, a short series of the hybrid Biston hirtaria & X Nyssia lapponaria ?, and gave notes on the mixture of the two specific series of characteristics. An African Specimen of M. Atropos.—Mr. Moore, Manduca atropos from S. Africa. Swiss Lycaenids.—Mr. Curwen, long series of Polyommatus eros and Latiorina orbitulus from Saas Graud and the Grisons respectively. LARVAE OF O. ATRATA AND N. FLUCTUATA AB. NEAPOLISATA. -Mr. B. S. Williams, larvie of Odezia atrata on Cytisus and a very varied series of Xanthorhoe fluctuata with ab. neapolisata from Finchley. Argentine Insects.— Mr. Cowham, cases of the large Psychid, Oeketicus platensis, examples of the Neotropical Colias, C. lesbia, a large and conspicuously marked "skipper" Venides phoenicola and an Arctiid, Expanthera indecisa. The Variation shown in Sicilian Butterflies.—Mr. Barrett, a large number of Lepidoptera mainly from Sicily, and read notes on the variation, they included Thais polyxena, Pontia daplidice, Anthocharis belia, Enchloe cardamines, with their racial, seasonal and aberrational forms. A New Ant.—Mr. Dennis, photographs of the ant Formica pratensis, a species closely allied to F. ru/a. An Aberration of T. Gothica.—Mr. Stallman, a Taeniocampa gothica ? with right bindwing reproducing the markings of the forewing on the upperside, from Holmwood. Local Lomond Lepidoptera.—Mr. B. Adkin, Lepidoptera from Local Lomond, dark suffused Brenthis sclene and Diacrisia sannio, a white suffused underside of Coenonympha pamphilus, etc. Paper.—Mr. A. Sich read a paper, "Notes on Tortrix viridana," on which a short discussion took place.

May 27th.—Micro-Lepidoptera.—Mr. Sich exhibited ova of Tortrix viridana laid in pairs on the bark of oak, and cases of a Solenobia, presumably S. lichenella from Barnes. S. African Lepidoptera.—Mr. Moore, Lepidoptera from near Johannesburg, Transvaal, including Hypolimnas misippus, Precis sesamus, Colias electra and var. aurivillius (comparable to C. edusa and var. helice of Europe), Papilio demodocus, Pyrameis cardni (the small Æthiopian race), Hippotion celerio, and Basiothia media, a small green Sphingid. LARVE OF X. SCOLOPACINA AND T. POLYCOMMATA.—Mr. B. S. Williams, larvæ of Xylophasia scolopacina from Finchley, and a series of Tricopteryx (Lobophora) polycommata from Yeovil. Aberrations of P. Huntera and B. Quercus.— Mr. Lachlan Gibb, on behalf of Mr. H. M. Simms, a fine suffused aberration of Pyrameis huntera from near Montreal, an ab. bellus of Bithys quercus from near Barmouth, and an aberration of Pharetra (Acronicta) menyanthidis in which the orbicular stigmata were absent. from near Sheffield. A Spanish Coleopteron.-Mr. Priske, an example of the Tenebrionid Coleopteron Morica planata from Paper.—Mr. Bunnett read a short paper, "The Maple Aphis," illustrated with drawings and lantern-slides.

June 10th. - Bred P. escheri. - Dr. Chapman exhibited a living specimen of Polyommatus escheri bred from ova from Gavarnie, Pyrenees. It was of the form rondoui. A RARE BOOK.-Mr. Hy. J. Turner, the whole of the coloured plates of the first ten volumes of Herbst's Natursystem, 1783-1804, which he had bought for a few shillings from a street barrow. Aberrations of Lepidoptera, and the "Buzzing" of H. prasinana.—Mr. B. S. Williams, aberrations of Selenia biliniaria (illiniaria), a very strongly marked 2 and a smoky 3; larvæ of Anticlea badiata and aberrations of Agrotis nigricans, a redbrown form from Wicken and a black form from St. Anne's. He also reported that he had heard Hylophila prasinana make a distinct, peculiar buzzing noise when in flight at night, as it came to his lantern light. Photographs.-Mr. Dennis, photographs with the stereoscope of Hispida atra and Formica pratensis, with sprays of laburnum and spiræa. Bred Strymon Pruni.-Mr. J. P. Barrett, a living specimen of Strymon pruni which had emerged on June 10th. It was considered an early date. Bucks Lepidoptera.—Mr. Dunster, a series of Brenthis euphrosyne taken in Bucks in May. MYGALE AVICULABE. -- Mr. Bunnett, examples of Mygale aviculare with photos of the same. Notes on R. Betulæ and P. Trifolii.—Mr. B. Adkin, series of local forms and aberrations of Ruralis betulae and Pachygastria trifolii and read notes on the exhibit. Of the former species he showed a unique aberration with an orange border to all the wings and much suffusion.

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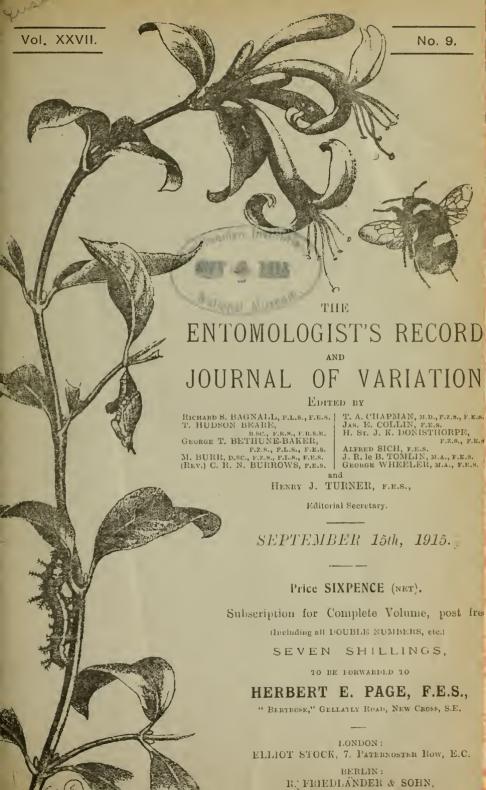
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#### Puente de los Fierros.

By P. A. H. MUSCHAMP, F.E.S.

Between my few lines about the fauna of Pajares and Mrs. Page's delightful article on the Cantabrians (pp. 121 to 129) there is a hiatus, a small elephant whose weight the lady author deemed meet to be neglected—Puente de los Fierros by name—of which I think some mention should be made, were it but to record the finding of Leosopis roboris. We rode down (I on a blind mare) from Pajares to los Fierros to discover a possible lodging for Mrs. Page. The pigsties, charming though they were, were wanting in many little vanities considered indispensable by the fair sex, e.g., there happened to be no mirror, and then too, those unshutable doors and ventilated walls through which rats, mice, pigs and other small deer did freely circulate! At Fierros we found really excellent accommodation at the Station Hotel. The food was good and almost European-only we had to wait for our meals till the train came in; if we were starving and begged very humbly we were sometimes allowed to start on the soup, but had to let possible travellers catch us up ere the second course was placed Fierros is charmingly situated from an artist's or an entomologist's point of view; we were, however, too late in the season to do very much there, and though we followed the road down northward for thirteen miles we found nothing to encourage us to continue in that direction.

On July 27th I saw a strange butterfly flying over brambles at the foot of a huge boulder, and I netted a torn and ragged "blue" which was all unknown to me. Overjoyed, I brought my catch to Mr. Page, and asked him if this could be L. roboris; my joy was indeed great when I was answered in the negative. Later on in the morning Mrs. Page and I perceived a second of these strangers flying about on the rocks by the roadside; a little scramble and a butterfly in pretty fair condition was bottled. Two days later I took a third, and was quite convinced that I had found a new "blue"! All three were "hens"; dark brown butterflies with violet rays at the base of wings, the underside a yellow dusted brown with a broadish bright yellow marginal border and blue arrowheads. Alas! here at home my picture-books promptly showed me that I had but netted three L. roboris. Still, I am sincerely grateful to those three ladies, for they taught me to feel the delight of the discoverer of new worlds. Finally, it is well worth noting that L. roboris is to be taken at Fierros. These three were last survivors, evidently, and it is very probable that a few weeks earlier we might have taken a goodly series. I do not remember seeing anything resembling Frazinus excelsior in the neighbourhood, the nearest plant to the ash was the privet; these three 2 s, however, hannted a heavy bramble that was common all over the country.

A pretty butterfly, of which I took but one specimen on the heather slopes here, was Melitaea phoebe ab. melanina. The "blues" taken, in a meadow by the stream, just a little down the north road, were Everes argiades, Celastrina argiolus, Aricia medon var. calida, Polyommatus icarus, a single large Glancopsyche melanops, Lampides boeticus, Lacosopis roboris, some fine aberrations of Polyommatus escheri, Agriades thetis (bellargus) ab. puncta, A. coridon var. albicans, Lycaena arion, and

SEPTEMBER 15TH, 1915.

Rumicia (Chrysophanus) phlaeas, with var. miegii of Heodes virgaureae. It was in this meadow that we spent most of our time. Through it runs the little torrent which we had followed right up to its source above Pajares; on the north side are steep slopes through which tunnels its way the line down to the coast; the passing trains come gasping out of the hole in the hill, gather in as much sunlight and pure air as they can as they pass above our meadow, and then plunge like frightened blind-worms into a second gaping hole; they disturb the absolute calm of the spot for a moment, but leave behind them an impression of sadness and thankfulness, thankfulness for the peaceful calm, of which we are now a part, sadness to think that we too soon must plunge into the hillside depths and roll down, slowly but all too fast, to a world of toil and moil. The small skipper Thymelicus acteon was common enough here, and indeed all along the roadside, in the ditch. Here, too, as at Pajares, I took a single Pyrgus Epinephele jurtina (janira) var. hisputla was abundant in the meadows on the side of the stream. At a corner of the road we disturbed each time we passed a number of Callimorpha quadripunctaria, the same form that we find here in Switzerland or in England, but so bright and fresh that I could not resist papering a dozen or so. A longish series of Plusia gutta might have been made with a little patience, but it was too annoying to plunge after a gutta and net a gamma twenty times in the hour. In the same meadow I took three Argynnis adippe ab. cleodoxa, and expect I might have taken plenty Among the moths were Dianthoecia carpophaga var. capsophila*, Cilix glaucata, Endrosis fenestrella, and Codona (Ephyra) orbicularia, and C. linearia.

## Collecting Lepidoptera in England, Spring, 1915.

By E. B. ASHBY, F.E.S.

One great effect that the war will naturally have upon many of us, who have in recent years collected so much abroad, will be to compel us—nolens volens—to throw ourselves again into the study of the Entomology of our native country, with the result that we shall probably not only have replenished our cabinets with fresh specimens, but we shall have more carefully studied and differentiated the spring and summer broods of our British butterflies. If this idea has been generally carried out, the year 1915 can be said to have been well spent from an entomological point of view.

It was with this purpose in view, that after a little sport with the males of Celastrina argiolus in my own garden at Hounslow in April and early May, I started, on May 22nd, for a nine days' hunt after English spring butterflies in a part of western Surrey remote from trains, holiday-makers and camps, however right and proper all those things are at this time. Almost immediately after my arrival the sun went in and I was prevented from catching more than single specimens of Celastrina argiolus, Hesperia malrae and an "emerald" moth. However I saw one Lentwig singuis on the wing

moth. However, I saw one Leptosia sinapis on the wing.

Next morning, according to the manner of entomologists on the first day of a holiday, I was up betimes, had an early breakfast and started

^{*} There is practically no difference in the genitalia of these two forms. See Gen. Brit. Noct., F. N. Pierce, p. 63, plt. xxii.—H.J.T.

on the two miles' walk to the collecting ground. The day was perfect and the country beautiful with the freshness of its spring verdure. The first brood of L. sinapis was well out but only a few were taken as English representatives of a species which is so common abroad. Enchloe cardamines, both males and females, were fresh and abundant. The spring brood of Pieris brassicae was quite fresh as was that of P. napi. The males of Brenthis euphrosyne were decidedly going over while the females were generally speaking in good condition. argiolus, both males and females, were well out, and Callophrys rubi was in very fresh condition and fairly abundant. The pretty diurnal geometer moth, Enlype (Melanippe) hastata, was flying singly in the sunshine and required more catching than one would imagine at first sight. II. malrae and Nisoniades tages were both fresh and abundant. Rumicia phlaeas was noticed singly and quite freshly emerged as also was Coenonympha pamphilus. It was too early apparently for Hamearis lucina, but I saw one or two hybernated Vanessa io. Amongst the bracken and bluebells of the woods Goneptery, rhamni was flying freely, and occasionally singularly well preserved specimens could be selected from these hybernated butterflies.

The following day more females of *Brenthis enphrosyne* were obtained and the first "cinnabar" moth, *Hipocrita jocobaeae* was met with. E. hastata was again met with and also a few L. sinapis were

seen.

May 25th was a delightfully fine day throughout. Both Brenthis selene and H. lucina turned up for the first time this year quite fresh and in excellent condition; apparently these species were now only

just commencing to emerge.

The following day I entrained for the North Downs area near Gomshall station. On the way up from Abinger Hammer C. rubi and C. argiolus were noticed both to be in poor condition, while on the grassy slopes of the Downs Polyoumatus icarus was quite fully out in multitudes and in splendid condition. The object of my visit was to get the spring brood of Agriades thetis (bellargus), but unfortunately it was apparently too early, for I only succeeded in getting one quite freshly emerged male out of the two seen in a tramp of some miles along the face of the Downs towards the Ranmore Common ground.

On returning to my former haunts on May 27th the weather was again perfect, and *Pararye megaera* first put in an appearance. The males of *B. euphrosyne* were now well over, while both sexes of *E*.

cardamines were common and in good condition.

The morning of May 28th broke very cold and it was quite impossible to do any collecting until after the sun came out, about 2 o'clock in the afternoon, when more B. euphrosyne and B. selene were selected.

On May 29th I found that II. lucina was becoming much more into evidence, although rather local in its habitats, as is its characteristic in this country. Rain came on and I spent much time in

sheltering and in searching for larvæ.

The sun, on May 30th, was unfortunately frequently overcast and spoilt what should have been a successful day, from what I saw of the ground I was working. H. lucina was now quite abundant, and I took some fine larvæ of Cosmotriche potatoria which have all since

produced imagines. Some temales of Diaphora mendica were taken, and several batches of larvæ have been obtained from their oya.

The following day, the last of my holidays among the spring butterflies of 1915, produced a specimen of Augiades sylvanus, an indication that summer was now upon us. The only spring brood which I failed to see at all was that of Pararye aegeria var. egerides for which I was probably too late, as it certainly occurs in the district.

#### "A Poser," Stainton.

(Agrotis lunigera versus Agrotis trux.)

By Hr. J. TURNER, F.E.S.

A casual perusal of the pages of magazines devoted to our favourite study, which were issued in the prolific mid-Victorian period, often proves of great interest and amusement, and may even start one on a task, which has to the present time been strangely ignored or overlooked.

The Entomologist's Weekly Intelligencer, vol. vi., issued on April 2nd, 1859, contains the above title to its opening page, and the article begins, "Is Agrotis lunigera a northern variety of Agrotis trux?" The remainder of the article gives no opinion, nor any facts bearing on one side or the other, but simply urges collectors to place the two "side by side in the same cabinet."

At once it was suggested to my mind, "Where do we stand now?" The Entomologist Synonymic List, interleaved with its many MS. alterations, additions, etc., was consulted. There I found Agrotis lunigera, St., without a synonym. Meyrick gave no reference to true and Barrett says, Lep. Brit. Isles., vol. iii., p. 318, "An opinion has been hazarded that it (lunigera) is merely a local form of A. trux, a species common in mountain districts of France, Italy, and Spain; but upon what ground such a suggestion has been made, it is difficult to judge." Tutt, Brit. Noct., vol. ii., p. 16, does not discuss the question but quotes the suggestion of Guenée, Noctuelles, vol. i. (v.), p. 280, that it may be recognised at some future time as a northern form of A. trux. In South's Moths of the Brit. Isles, 1st ser., p. 205, is found the definite statement, "Although its (lunigera's) position in classification is that of a local form of A. trux, Hübn., this moth may here retain the name that was given to it by Stephens in 1829." The italics are The author evidently has not a sufficiently strong opinion of the validity of the "is" to make the necessary nomenclatorial change which that statement must entail if it be based on actual fact.

Hampson, in his comprehensive work issued by the Trustees of the British Museum, Cat. Lep. Phalaenae in Brit. Mus., vol. iv., p. 245, totally ignores the question, lumps all the suggested identities together as simply synonyms of true, viz., lenticulosa, terranea, lunigera, olivina, and amasina, giving no indication as to whether they are known as racial or aberrational in significance. He then sums all the ill-achieved results of previous authors' work in one description of true, and adds—

ab. olirina. Forewing with slight greenish or violaceous tinge.

ab. terranea. Fore-wing ochreous or pale rufous.

ab. amasina. Fore-wing fuscous grey, darker in 2 with median shade blackish.

ab. lunigera. Fore-wing with dark brown in 3, fuscous in 2; the claviform filled in black, the orbicular white defined by black. These are easily recognised as a mutation of Standinger's Catalogue.

So much for British custom and opinion at the present time.

What do the continental authorities say in this matter? Standinger's Catalog, ed. iii., p. 151 (1901), is found the following:-TRUX, Hb. 723-5; H.G. 770; Frr. B. 62; Tr. V., 2, 22; B.Ic. 79-5; H.S. 525 ab.; Gn. I., 279; Calb. Iris. I., 229, t. 12, f. 10; terranea, Frr. 34, 1; lenticulosa, Dup., VI., 72, 5, 6.

(a) ab. (et var. ?) olivina, Stgr.; trux, H.G., 768-769; B.Ic. 79, 46, b; trux var. A., Gn. I., 279; (al. ant. viridescenti vel violaceo-griseis).

(b) ab. (et var. ?), terranea, Frr., 34, 1; true., var. C. Gn. I., 279 (al. ant. testaceis vel. griseo-rufescentibus).

(c) var. amasina, Stgr. (al. ant. sordide griseis, in 2 obscurioribus, linea transversa vel fascia media (umbra) nigricante.

(d) var. (et ab.) lunigera, Steph., Ill. p. 113, t. 20, f. 2; Gn. I., 280; Tutt, Brit. Noct., II., p. 14; Barr, Brit. Lep., III., t. 128, f. 1 (al. ant. macula sagitt.

distincte nigra).

Not much real evidence here. Stephens was the original describer of lunigera as a species. Both Tutt and Barrett dismiss the question with merely quoting the guarded opinion of Guenée. Standinger himself evidently does not enter into the question but simply takes the unfounded suggestion as a fact and catalogues accordingly.

A perusal of Seitz, Macro. Lep. of World, Palearctic Fauna, vol. iii., p. 30, plt. 6, with 7 figs. of trux and its supposed forms, shows an

equally blind acceptance of this hitherto unbased opinion.

In my own collection I have a series of 16 beautiful, picked examples of lunigera (eight 3 s and eight 2 s) from some 400 taken in the Isle of Wight, by Mr. A. Hodges, the first proprietor of the Ent. They are absolutely distinctive in tone from any other British Agrotid, and their markings, although variable in emphasis, are always quite definite in position and general contour. There is a peculiarly soft silkiness of texture, which is possessed by no other Agrotid which I know, and the specimens were captured and not bred.

The following is a sketch of the history of trux as a species and a comparison of the figures and remarks given in various authors from

the time of its first appearance in Hübner's great work.

In 1826, Hübner, Samm. eur. Schm., Noctuae, plt. 155, figs. 723 3, 724 9, 725 underside, gave three figures of a Noctuid which he named There is no reference to it in his meagre letterpress. There is nothing in these three figures to compare with our lunigera in shape, colour or markings. The male, fig. 723, has a pale yellow basal patch on the inner margin of the forewing of considerable size, and the outline of the wing is different from that of lunigera. Inside the fringes of the hindwings there is a sharp black line interrupted sharply by the veins of the wing into straight short dashes, and the outer margins of all the wings are in no respect comparable with those of lunigera. The female, fig. 724, has a submarginal transverse line, which stands out as a clear feature never apparent in any ? lunigera and the outer margin of the forewing is much more convex, with the

result that the apex is less sharply angled. There is no trace of an oblong deep black blotch below the orbicular stigma which is always so distinctive a character of lunigera, even in the darkest males. The colour of the female, fig. 724, is somewhat that of Noctua oleracea, a tone I have never seen even suggested by any specimen of lunigera, however aberrant. As a general remark on the figures I would say that they are poor in execution, probably owing to the painter's failing

powers, as he died the following year.

Duponchel, in the year 1826 (?), in Hist. Nat. des Lep., vol. vi., p. 18, plt. 72, figs. 5 and 6, ♂ and ♀, describes and figures a Noctuid as lenticulosa, which on the continent is generally taken as a form of the Agrotis trux of Hübner. If one compares the figures, this assumption is pure rubbish, and Duponchel's figure cannot in any respect be confused with either lunigera or trux of Hübner. There is not a character in either fore- or hindwings which is comparable. Duponchel, however, in his text, says that some entomologists take it for the insect named by Ochsenheimer as infecta, but as M. Godart had already finished the plates on which it was figured and named, he would not adopt the prior name. He further says that it should be placed near saucia and corticea, a remark which, coupled with the figure, suggests an absolutely distinct species from either trux, Hüb., or lunigera, Stph.

[I have since, at the kind suggestion of Mr. J. H. Durrant, referred to the volumes* containing the original figures executed by M. Dumeril, etc., for the plates of this work, and must acknowledge that the strictures written above do not hold good for these. The execution in the whole of the original figures is excellent, even beyond Hubner, and will bear minute examination. The artist employed to execute the published plates must have been badly colourblind. It is grievous to compare these caricatures with the delightful original paintings.]

In 1829 Stephens, in his *Illus*, vol. ii., p. 113, describes, and on plate 20, fig. 3, figures a species which he names *Agrotis lunigera*, a name which we still continue to use in this country, applying it to a very beautiful Agrotid which may or may not be the species intended by Stephens. He had only seen three specimens, which all came from near Cork.

His description is as follows:-

"Alis anticis fuscis, flavescente variegatis, strigis duabus geminatis nigricantibus, stigmâ anticâ internè flavescente; posticis luteo-albis."

He continues :-

"Head deep fuscous; thorax the same, varied with yellowish, with a large spot of the latter colour on each side at the base of the wing; anterior wings rich fuscous, varied with yellowish, with an angulated black streak at the base, united to an abbreviated pale striga; behind this, at a distance from the anterior stigma, is a transverse yellowish-waved stigma, bordered on each side with dusky, and very much angulated towards the inner margin; a similar striga arises from the costa, opposite to the posterior stigma, and, bending outwards, turns rather suddenly towards the inner edge, the space between the arch and the stigma being yellowish, or dull ochraceous brown; near the

^{*} In the Walsingham Library at the British Museum (Nat. Hist.).

hinder margin is a pale waved streak, and the margin itself is spotted with black, with a pale griseous line at the base of the cilia; the anterior stigma is dusky towards the costa, and bright flavescent towards the inner margin of the wing, forming a lunule of the latter colour; the posterior stigma is margined anteriorly with black and flavescent, and posteriorly with black; the body is pale fuscous, and the posterior wings of a creamy white, with the nervures rather

dusky."

Stephens' figure, by C. M. Curtis, fig. 3 (not 2, see corrigenda), plt. 20, is very stiff, and extraordinarily asymmetrical in markings on the forewings and in the venation of the hindwings, nor does it at all agree with the description, pp. 113-114. There is nothing "yellowish," nor "flavescent," nor "ochraceous brown," nor "bright flavescent" on the forewings, nor are the hindwings "creamy white." The figure is suffused over a considerable area with greenish-grey, and much of the remainder is suffused with reddish-brown (not ochraceous), while the hindwings are coloured variously evidently to pourtray a pearly appearance. With difficulty one can trace, or partially trace, some of the markings mentioned in the description, but the two sides are absolutely at variance, even when the characters

are present, as with the stigmata.

Equally is the description of Stephens at variance with the insect we now call lunigera. Perhaps the most prominent specific characters in the markings of our lunigera are the soft silky-grey colour-texture of the forewings, the always present staring light-coloured orbicular stigma, and the ever present jet black claviform stigma beneath the orbicular. These characters are neither mentioned in the description nor included in the figure, but they are described in terms which are absolutely at variance with those conspicuous points of lunigera as we know it. Exception must be taken also to the shape of the wings. In the figure the apex is much too sharp, the outer margin is an impossible one, and in the hindwings the margin gives quite the opposite impression to that our lunigera gives. In this the darkened vein-colour extends into the cilia, and the marginal somewhat dark line appears thicker or wider between the veins at the base of the cilia, and gives a curious scalloped appearance, exactly the reverse of what is drawn in the figure. This is only seen in the males, as the dark shading of the hindwings in the female gradually intensifies towards the hind margin, and obscures the emphasis of the marginal line at the base of the cilia. There is one character of our lunigera which is shewn in the markings of the figure, and that is the more or less conspicuous, extremely bent, double transverse line on the basal half of the wing inside the stigmatic area. This is given in the figure on one side, but shown as a narrow deep black band of nearly uniform width. In the insect the two lines are always separate, and the space between is variable in width. The lines on the other half of the figure are not at all comparable with those referred to above.

In 1829 Freyer in his Beiträge zur Geschichte europäischer Schmetterlinge, vol. ii., p. 44, and plt. 62 (2 figs.), gives an account as far as is known of the Agrotis trux, Hüb., and gives two figures which are very different from Hübner's figs, 723, 724, in both shape and colour. The hindwings are pure white in Freyer's figures, the bodies are slender for Agrotids as a rule, the general figure is that of an insect

much more slender than the *trux* as figured by Hübner. One figure has short square wings and the apices of the forewings in both figures are much too sharp, and in one figure the anal angle is also much too sharply angled for the *trux* of Hübner. Placed side by side these two sets of figures differ absolutely in colour and markings, the latter being in different positions, of different size and different in shape. These remarks also apply equally when the comparison is made with the insect we now know as *lumiyera*. In his letterpress Freyer says that his *trux* is near Hübner's *seqetum*.

After the death of Hübner, Geyer continued the issue of plates Sammlung, eur. Schm., and about the year 1833 issued plate 163 on which the figures 768, 769, 770 were labelled as Agrotis trux. No one would take these figures as representing any form of lunigera. The shape of the wings in the figures are not so divergent from lunigera as in the other figures we have examined. Fig. 769 is of an almost uniform green tint with prominent darker markings along the submarginal area of the hind margin of the forewings, and with a similarly coloured mark on the costa near the apex, together with a row of a few black dots inside the hind margin. There is a fairly emphasised discoidal mark or remnant of the reniform stigma, and a few dark costal marks, the rest of the wing area is unmistakably green or olive green. Fig. 768 shows a double row of dots in the area before the fringe of the hind margin of the forewings. The general coloration is of a bright brown, the reniform stigma is large and blackish-brown in colour. Both these figures are said to be 3 insects. Fig. 770 is said to be 2, but has markings so varied and groundcolour so light as almost to preclude the suggestion that it is either trux or lunigera, even if the markings were comparable. Noctuid markings, stigmata, blotches, submarginal lines, sub-basal lines, costal streaks, dots, etc., do not agree in size, shape, position and colour, with those of lunigera, nor do they agree with those of Hübner's trux, as previously figured. The hindwings of all the figures are dirty white, to shades of brown in both sexes, darker in the female. As before stated, lunigera is of a soft silky grey colour, and there is no element of green or olive perceptible or suggestible in any example I have seen; the hindwings of the males are not dirty white, but pure white.

In the same year Freyer, in his Neue Beiträge, vol. ii., plt. 34, p. 63, figures and describes a Noctuid, which he names terranea, and which subsequent authors have put down as a form of truc. As regards colour, he says it is comparable to Taeniocampa stabilis, and in size and shape to segetum and exclamationis. To us the colour of the figure is more like that of Noctua oleracea, with a very strongly marked submarginal whitish transverse line, and clear white-margined stigmata. In no way is it comparable to Hübner's figures, nor to Freyer's own figures in his Beiträge of 1829.

About the same time Boisduval, in his *Icones*, gave three figures of *Agrotis trux*, on Plate 79. Fig. 4 is named *trux*, and figs. 5 and 6 are termed varieties. In fig. 4 the orbicular is fairly conspicuous, as a dark spot and the reniform is also shown, but the claviform is non-existent. The general colour is dark grey, with a transverse brown shade midway between the two expressed stigmata; the fringe of the outer margin is also of the same brown tinge. The hindwings are

pure white, shaded slightly to the outer margin. There is no lighter area at the base of the forewing's inner margin as in some of the figures I have seen and quoted. Fig. 6 is a very similar figure as regards the ground colour, but the claviform is expressed and conspicuously dark, while the orbicular has to be looked closely for. There is no transverse band of brown tint, but the outer marginal fringes are brown or dull orange, perhaps. The hindwings are much darker marginally than in fig. 4. Fig. 5 is a brown form, the basal half being much darker, as is also a narrow irregular area inside the fringe. The fringe itself conforms to the lighter ground colour. The claviform is entirely absent, the orbicular represented by a dot, and the reniform is expressed fairly well. The hindwings are as in fig. 6. No varietal names are attached. None of these figures are at all comparable to our lunigera.

In 1835 Treitschke, in vol. 10, pt. 2, p. 22 of his Schm. Eur., states that he has numerous examples of a species which suggests Hubner's figures of trux, although there is much divergence. He hazards the remark that Hubner's figure is that of a variety and not typical, and that his specimens seem to fall to this species rather than to any other. Otherwise the resemblance is greatest to Agrotis cursoria and in size between that species and A. erclamationis. From these remarks it might seem that the author had specimens of lunigera before him, but his subsequent description speaks of red-brown and yellowish-brown markings, which colours are never present in any form of lunigera.

Herrich-Schaeffer in his vol. ii., p. 351, of Sys. Bearb. Schm. Eur., refers to the extreme variability of Ayrotis trux and notes the "bright green" example figured by Geyer (769), and a "very red" one (18) figured by himself. His description commences: "Colore valde variabilis, griseo-ochracea, fusco-grisea, subferruginea, viridi-mixta, signaturis aut bene expressis aut obsoletissimis." This is expressively full and yet delightfully vague. His further description of the markings would suit many an Agrotid, but not any particular species, certainly not the luniyera of Britain. In the synonymic catalogue at the end of the volume he lists luniyera as quite unknown to himself.

In Herrich-Schaeffer's copy of Guenée's Noctuelites, Species Général, which I possess and which has many MS. notes, he makes no additional

remarks on any of the forms Guenée includes.

Guenée's work, Noctuelites, vol. i., dated 1852, gives as Agrotis trux type, the grey individuals strongly powdered with ferruginous-brown, and refers to Godart's figure of lenticulosa which he says is very inexact in illustration. (It is probable, from his remarks, that he had not seen the original paintings of Dumeril.) There is a sub-variety almost entirely covered with black striæ, obliterating all the designs, which,

he says, corresponds to the black variety of A. segetum.

Guenée next refers to the greyish and greenish examples, but little powdered, with scarcely any markings or stigmata, as var. A, instancing Hübner's figs. 768, 769. Next he refers to the individuals of a brick-red ground-colour with almost all the markings obliterated, as var. B, referring to Boisduval's fig. 5 in his *Icones*. The terranea, Frey., is not considered by him as a distinct race, and he would also include here the ferrida of Hübner, fig. 711, but has not seen it in nature, yet is confident that it cannot be put with A. segetum.

He next gives an account of what he says is the lunigera of

Stephens. He describes it as of a clear testaceous grey, much powdered, and suffused in parts with brown chocolate, with markings as in true, but more obscure, the two median spots well developed and strongly margined with black, the orbicular round and clear, the reniform large and entirely filled up, except at one point inside, the claviform short and black. The lower wings white, somewhat yellowish, suffused with clear grey with nervures of the same colour. That this is not a description of the lunigera in our cabinets to-day will be evident to anyone. Whether Guenée had an insect before him at the time he made his description is not apparent. partakes of the appearance of exclamationis and segetum, a remark that he may have copied from Freyer (see above), although it had quite a different appearance from true, to which it is closely related. also says that he would not say that it might not in time be recognised as a boreal form of true. A specimen which Guenée had sent him for identification from Scotland, which he calls var. A. of lunigera, he describes as of a clear grey ground colour, almost so uniform that it renders the markings very distinct and quite clearly emphasised, and at first glance resembles exclamationis, but belongs to luniquea. From these remarks I would suggest that he had at last an example of the insect we now know as lunigera before him, an insect without a trace of red, brick-red, ferruginous, testaceous, green, chocolate, or yellow, etc., in its coloration.

In 1856 Stainton, in his Manual, vol. i., p. 221 and 224, particularly mentions the "conspicuously pale orbicular stigma," but says, "F.w. grey shaded with reddish-brown," "the ren. st. . . . filled up with red-brown."

In his Catalogue, ed. i., 1861, and ed. ii., 1871, Staudinger simply gives the trend of continental opinion, in the first edition true and lunigera as two separate species, in the second lunigera as probably a Darwinian form of true.

Newman, in 1872 in his *Ill. N. H. Brit. Moths*, p. 325, gives a short, very good, description and accurate colour discrimination of the present day *lunigera*, but his figures are too obscure to be recognisable (1st edition).

In 1884 (1888), in the first volume of *Iris*, p. 229 Calberla gives an account of various insects taken in the Roman Campagna and among them a Noctuid which nearly resembles segetum and which he supposes resembles the *lenticulosa* of Dupovchel, and therefore must be a form of *trux*. He gives a figure (sic) of it on plt. xii. which might represent a Noctuid and might, not. As to markings, it is marked all over with obscurities!

Tutt, in his British Noctuae in 1892, vol. ii., p. 15, give an excellent description of British lunigera (I. of Wight), having examined a very large number, many hundreds of examples, which I saw at the time. He says that "reddish forms are excessively rare," and he only knows of "two thus tinged."

In 1894 Hoffmann in *Gross Schm. Europas*, plt. 35, figs. 15, a, b, gives very good figures of the two sexes of British *luniquea*, and in figs. 14 a and 14 b figures the two sexes of *trux*. There seems no specific comparison between these two, the texture in the reproduction even absolutely prevents this suggestion. In the text p. 83 he treats the two as separate species.

In 1901, as seen above, Staudinger in his Catalogue, ed. iii., includes lunigera as a local race of trux.

Barrett's description, Lep. Brit. Isles, vol. iii., pp. 313-4, is an excellent one of British lunigera, both as regards colour and wing markings, and there is no suggestion of the red or chocolate or flavescent brown of the continental descriptions of trux.

(To be concluded.)

#### Notes from the Trenches.

By K. G. BLAIR, F.E.S.

Life in the trenches just now is not of the most exciting nature, in fact it is rather the other way, a monotonous recurrence of dull uninteresting duties, chiefly doing sentry, varied by a few fatigues, eating and sleeping, and killing time, so that one is ready to make the most of any little item of interest that turns up. The interchange of courtesies between the opposing lines is by day almost confined to the passage of a few shells and bombs, with a little spasmodic rifle fire. By night the latter becomes much more lively, indulged in for the most part by the Germans, who have an unpleasant little habit of raking the top of our parapets with machine guns on the chance of catching any sentry venturesome enough to poke his head up; but as this is practically all chance firing and not aimed at definite objects, the net result is almost negligible. By night the sentry usually has one hour on duty, one hour sitting beside his successor, then, with luck, one or two hours sleep, but if there be any trench repairing to be done he may have to forego some of his sleep for this purpose; by day just now, 4 a.m. to 8 p.m., he gets two hours on duty and four or more off, according to the number working the traverse. Cooking occupies a good deal of one's off time, as all water has to be boiled before it is safe to drink it. It may be taken from the pump of some ruined farm near the lines, often approachable only by night, or more often it is from some shell hole. Yesterday I nearly got a fine female of Dytiscus marginalis in my canteen for tea. A thing of that size one can, of course, avoid, but smaller fry one pays no heed to, just boils it up with the tea and swallows the lot.

The entomologist has ample leisure for noting features of interest around him, and some few species of insects there are which force themselves upon the attention of even the most unentomological of "Tommies." Probably most men if asked what point about the insects of France struck them most, would refer to the extreme abundance of lice. At first one is inclined to regard the insect with loathing, and to have the epithet "lousy" applied to one would be an insult meriting instant chastisement, but as usual familiarity breeds contempt, and one even comes to regard them as one of the minor perhaps, but none the less unavoidable, horrors of war. They may be to some extent kept down by the free use of various insecticides and frequent change of underclothing, but it seems impossible to avoid picking up a new invasion both in the trenches and in billets.

They occur in two distinct forms known generally as "white ones" and "black ones," or "Scots Greys" and "Black Watches," and the popular belief is that the white ones are so to speak, our own domestic stock, while the black ones are exotics imported from our Indian comrades.

As my battalion forms a part of one of the Indian Divisions and we are continually using billets last occupied by some of our dusky friends, and as moreover the latter, when searching their persons and clothing for the "wee beasties," do not kill them by squeezing them between the thumbnails in our accepted fashion, but merely throw them down in the straw, there would seem to be some foundation for the belief, but it appears to be another of those pretty little theories quite unsupported by facts. The black ones, so far as my observations go, are the males and the white the females, the latter sex predominating.

In our western theatre of war they do not seem to play any part in the spread of disease, but where typhus is prevalent its transference has been traced, at any rate in part, to lice. The infection is transmitted not directly by the bite, but indirectly by the expressed contents of the alimentary canal coming in contact with an abraded skin surface; hence the importance of refraining from scratching the body

when the irritation from the bites is experienced.

Flies of many species also contribute a considerable menace to the health of the troops. They are certainly much too numerous for comfort, particularly swarming around any carrion or refuse left exposed, but they may be combatted by proper attention to sanitation and by keeping all food carefully covered up. Nevertheless it is undoubtedly to the general inoculation against typhoid undergone by the troops, that the almost complete immunity from the ravages of this disease is to be attributed. In spite of a certain amount of hostility to the practice among the troops, a more ample justification of compulsory inoculation could scarcely be demanded.

Apart from those insects of economic importance to the health and well-being of the troops, there is a good deal of collecting to be done in odd moments, even in the trenches themselves. Many minute species of beetles are to be found crawling over the sandbags, the most noteworthy perhaps being Anthricus sp.?, which occurs in hundreds, and numerous small Staphylinidae: the little earwig, Forficula

lesnei (?), is also fairly common.

The facilities for actual collecting are not very great, and for lack of accommodation the larger specimens have to be noted only. Of the butterflies Pararye megaera is probably the commonest species, and a single specimen of Colias hyale is the most out of the ordinary that I have seen. The country hereabouts does not seem to offer very great possibilities, though if one could linger in likely spots instead of merely picking up what chance throws in one's way during halts, it would be interesting to compare the fauna of this London clay area with the fauna of a similar area in Middlesex or Sussex.

### A note on Scolitantides orion, Parnassius apollo, Lycæna euphemus, L. arcas, Polyommatus amandus, and Cœnonympha tiphon. Their gradual spread in the Rhone Valley.**

By LILIAN M. FISON.

On page 16 of this volume I stated that I had discovered Scolitantides orion at Charpigny on June 2nd, 1914. I also found Parnassius apollo

^{*} I am indebted to the Rev. G. Wheeler, and to Mr. R. Temperley, for much of the information recorded below.—L.M.F.

there on June 10th, 1914. The presence of these species interested me as I was not certain whether they had been taken in this locality before. I thought it possible that my late uncle, Mr. A. J. Fison, had introduced them by bringing larvæ to Charpigny with their foodplants, Sedum telephium and Sedum album, perhaps from the Southern Alps. However, Mr. Wheeler says (in litt.): "I am not aware that your uncle deliberately brought S. orion larvæ to Charpigny, but he may very possibly have brought ova in plants of Sedum, either from Branson or, more probably, from south of the Alps . . . still I had long entomological conversations with him the year before he died, and he did not mention it.

"On the other hand, P. amandus has become common in the Charpigny marshes, and L. euphemus and L. areas near the Rhone at Aigle, neither species having been found there at all, till some eight or ten years back. One may say this with certainty, since they were all localities that your uncle had hunted regularly for many years. Charpigny is quite ideal for S. orion, and it might get there from Branson, quite as easily as P. amandus from Vernayaz."

(I should add that I took *P. amandus* in the Charpigny marshes in June, 1914. It occurred, too, singly at Charpigny, on the road leading to the stables, and between St. Triphon Station and Charpigny.)

Mr. Reginald Temperley, in a later letter, writes: "The P. apollo and S. orion found at Charpigny . . . . were intentionally introduced by your late uncle. The caterpillars were supplied by someone

whose name I have forgotten. . . . .

"As to P. amandus, L. enphemus, and L. arcas having put in an appearance in the localities you mention within the last ten years, this is a matter of opinion only, with nothing to support it apparently, beyond the fact that your late uncle had never found them there. I believe that Mr. Fison's not having reported any of these three species was because he had not looked well enough at the right time. Neither had he ever found C. tiphon, observed for the first time in 1905 by myself, and reported to him, and which species swarms in the valley on the skating-ground and upwards for quite one mile, and probably in places all the way to St. Triphon quarries, as I took a few there last June. . . .

"Mr. Wheeler's views may be correct about P. amandus getting from Vernayaz. From whence comes C. tiphon?—Loèche?—and there is also L. areas and L. euphemus to account for. Areas occurs on the hills behind Clarens. Personally, I am of opinion that all these four species have been there for quite a long time. I could mention another fly that the late Mr. Fison had not seen in these parts

which exists there.'

Finally, Mr. Wheeler writes: "With regard to P. amandus, I can state quite definitely that it is not a matter of unsupported opinion. It occurs on ground that both your uncle and I, together and apart, had regularly hunted for many years. The first year it was found there very few specimens were seen; the next year they were still in small numbers, but much less scarce, and from that time onwards they have been quite common. A single female having been let out, or blown, or flown there would be sufficient to account for its appearance in so suitable a place. As far as it is ever possible to be absolutely certain of any negative fact, I do not think that the previous absence

of P. amandus can admit of a shadow of doubt. With regard also to Lycaena enphemus and L. arcas, Favre and Wullschlegel, in their Macrolépidoptères du Valais, omit all mention of their occurrence, either in that canton or in the neighbouring parts of Vaud, though this district was well within the range of Wullschlegel's hunting-grounds, and was well-known to Chanoine Favre also. To go further back still, none of these three species were known from this locality to the indefatigable Mr. Tasker of Villeneuve, nor is there any previous record of them among the almost innumerable articles which have appeared in the different magazines on the butterflies of the Rhone Valley. C. tiphon is certainly spreading—I found it last year in the St. Triphon marshes where I have never seen it before, though my experience of that locality began in 1897 or 1898. I was aware that it occurred in that end of the Rhone Valley, as I took one specimen somewhere in the Bouveret direction the first year I was in Switzerland, but never found another, though I frequently searched all round those parts. With regard to P. apollo, it has occurred at Charpigny ever since I have known the place, which was before I knew your uncle, but always singly, so that caterpillars introduced there by him would be likely to establish themselves without difficulty."

### Lepidopterology.*

It would be possible to say a great deal about these volumes that has already been said about their predecessors, especially in regard to the work of M. Culot. The plates, lithographed and drawn by him, appear to be as near perfection as one can expect to meet with, though M. Oberthür regards the figures of Egeriidae already executed for the eleventh fascicule to be really beyond anything M. Culot has so far

produced.

This leads one to think over M. Oberthür's preface, which is placed where prefaces ought to be, namely, at the end of Part 1, since prefaces like this one usually consist of something the author wishes to say to his readers, not before the work is begun, but after it is finished. It is dated March, 1915, and relates how, in the previous May (1914), the date "September, 1914" was printed on page 5 of the Title. The text was finished in June, 1914, and was printed to p. 192. M. Culot had dealt with the Rhopalocera and Sesiidae of Barbary, and had received various Arctiidae and others with which to continue the plates. M. Oberthür then relates how he was at Gavarnie with various members of his family, and was joined there by his grandson, Henri, and Mr. Powell, who had been making an entomological exploration of other portions of the Pyrenees, not forgetting some mountaineering as not foreign to the supposed main object. M. Oberthur's love of the mountains, of such a calm and peaceful centre as Gavarnie, finds expression in his enthusiastic pictures of the glorious weather, the abundant insects, the captures at the electric lights in the evenings, his pleasure in seeing his old friends MM. P. Rondou and Henri Posset, the latter of whom he had known for 45 years. All this is pleasing and delightful, but, alas, there came suddenly, the sad and

^{*} Études de Lépidoptèrologie Comparée. Par Charles Oberthür. Fasc. X., Partie 1, Texte, pp. 459. Partie 2, Planches, 177.

depressing change, which we have all suffered from in some degree. On July 25th, the Colonel of the 144th Infantry Regiment,* who had been making excursions and ascents with M. Henri Oberthür, had started for an ascent of Mount Perdu, and guides were hurried after him as a despatch recalled him urgently to his regiment at Bordeaux. This was disquieting, and on the 28th M. Oberthür thought it wise to make for home. Arriving there on the 31st (by automobile) there seemed still a chance for peace.

There follows a short resumé of the facts of the events up to the war. He adds that it is not his business to become, in an Entomological work, the historian of the most bloody and terrible war there has ever been. Yet one remembers at a quite recent meeting of an Entomological Society, a most interesting and vivid letter from the front was read, bearing on the experiences and exertions of members of the Society, and unfortunately on the loss of some of them, but no one seemed to regard the time spent in listening to the letter as otherwise than properly and appropriately employed. M. Oberthür's three sons and a grandson are engaged actively in the war. His grandson, aged 18, has voluntarily joined the 102nd regiment of the Infantry.

Referring to the brutality of the Germans, he adds:—

"In such unhappy times, when all families are constantly receiving the saddest news—telling of the death, glorious, no doubt, but so grievous, of some relative or friend, whom we held amongst our dearest and most loved—one feels that all scientific labour becomes impossible, and that the publication of any work begun in more propitious circumstances must be postponed sine die.

"Hence the date, 'September, 1914,' printed in May, 1914, has

since elapsed. Yet the volume X. was nearly finished.

"I decide, therefore to publish the volume, so far as it goes, that is, up to the point it has reached. I realise that it will require a supplement, yet I felt I ought to so determine before successive mobilisations had left our printing works without the skilled personnel indispensable to the production of my book. How many of our fellow workers, since the first days of August, have left our house to bravely take their place in the arms where they had in their youth received military training. . . . Meantime, oppressed by anxiety for home and country, suffering acutely the pain which so many deaths have caused us, in our own town and in the Breton country, aged by cares more than by years, I fear that the present entomological work, with the portion relating to the Aegeriidae, in sight of completion, is the last which I shall be able henceforward to produce.

I had wished, whilst I still had the strength, to complete the Fanne des Lépidoptères de l'Algérie. It was a purpose that was dear to me; the war which civilised nations find themselves compelled to maintain, for more than seven months, against the savages, is the

reason why the dream will probably not become the reality.'

Thus abbreviated and (badly) translated, one loses almost all the apt and vivid expression, the poetic instinct and the deep feeling that the whole preface breathes; but even so it tells us something of the attitude of our leading Lepidopterist, who, whilst he still can do so

^{*} M. Oberthür adds in a note that Col. Gauthier commanding the 144th Regiment, was killed gloriously, at the outbreak of the war.

much, finds his opportunity snatched away. One may, however, reasonably hope that after a time M. Oberthür will be able to continue to gratify us with the results we still hope for of his prolonged

and ripe labours.

The text deals with the butterflies of Algeria, and one can hardly open the book anywhere without finding something of greater or less interest. Perhaps the outstanding feature is the wealth of observations of H. Powell on the habits and early stages of so many species. No less than 237 of the 860 pp. are claimed by the genus Satyrus, much of it dealing with Powell's observations of eggs, larvæ, habits, etc. 56 pp. contain a paper by M. Fd. le Cerf on the morphological characters of the Algerian Satyri with many text figures of antennæ, palpi, details of proboscis, scales and scaling, legs and genital armature, male and female.

Of our British butterflies, there is a full discussion of the forms of Aricia medon (L. agestis); Agriades thetis (bellargus), also receives some attention as to sundry varieties. Of Colias hyale and C. crocens (edusa), synonomy is discussed. Mr. Powell reports that C. edusa lays upon many and varied Leguminosae, and cites lucern and other non-British

plants.

Amongst the Satyri, there is a most interesting excursus on Linné

and the name semele.

The portraits of Entomologists include French, Italian, Russian,

Swiss, American, and English Lepidopterists.

The photographs (by Powell) of localities for various butterflies are often good pictures apart from any special interest, such as plts. 2, 14, 46, but are always good photographs and show well the nature of the country.

The seventy-six photographs, of eggs, larvæ, &c., present some excellent representations of eggs, in which the difficulty of getting so large objects altogether in focus is overcome by presenting two or more of each egg at different horizons, and in most instances with much success, as for instance in plt. 56, eggs of Epinephele endora-mauritanica, ×25. Syrichthus onepordi, photos. 64 d, 64 c, Syrichthus numida, 64 f,

S. proto, 64 j, and 64 k, etc.

When we come to the plates by M. Culot, we find illustrated chiefly those Algerian species and forms that have not been illustrated in previous portions of the "Études," just in fact as we find in the text. Four forms of machaon are figured, three of var. feisthameli. Five figures of Thais rumina show curious aberrations of the denticulation of the hindwings. Aporia crataeyi, Anthocharis falloni, A. charlonia, A. belia (enpheno), and Calicharis nouna occupy three plates, and admirably illustrate both the species and M. Culot's art. Forms of Melitaea didyma and M. deione take the next plate. Four plates of Satyrus prieuri, S. ellena, S. semele, and S. nelrai follow. Melanargia ines, Epinephele and Coenonympha, Lycaena iolas, Glaucopsyche cyllarus and Celastrina argiolus occupy two plates. Plate 289 shows Scolitantides (L.) abencerragus = baton, S. allardi and S. martini, but especially a series of S. (L.) fatma, which Mr. Powell not only met with in quantity, though previously barely known, but of which also he very successfully followed out the life-history as described in the text and illustrated in the plates of photographs, and of his excellent drawings (plate 301). The foodplant (Salvia argentea) is very unusual for a Lycaena. A. (L.)

agestis = medon is very fully shown, and also various species of Thestor and Cigaritis. Several Argynnids, some skippers, and a remarkable aberration of Satyrns tidia complete the imagines, with the exception of three plates of Celerio enphorbiae-manretanica and some exotic Papilios.

The fourteen plates of Powell's drawings of larva, pupa, &c., show skippers, geometers, Earias, Somabrachys, Noctua, Lasiocampa, Lemonia, Zygaena, &c., those illustrating S. fatma already alluded to, and the greater part of four rather full plates of Satyrids seem of especial

interest.-T.A.C.

## A remarkable Marriage-flight of Ants and some Theories.

By W. C. CRAWLEY, B.A., F.E.S.

On August 8th last there took place at Weybridge, Walton-on-Thames, Hersham, and probably all over the county, the largest marriage-flight of ants of the genus Lasius (or Douisthorpea) that I have ever witnessed. At Walton it began at about 3.30 p.m., and probably in some districts was continued during the following day, as on the 9th I found hundreds of L. niger winged ? ? on Westminster Bridge. The three species concerned were L. niger, L. flarus, and L. umbratus, the first two predominating (there was also a flight of Myrmica scabrinodis, but we are not directly concerned with this). The ??, both winged and dealated, covered every road and path for miles around, and on a piece of waste ground about 50 yards square

there were four to six ants on every square foot.

In the case of Lasius niger and Lasius planus the usual procedure was, after the 3 3 and 9 9 had joined on the ground, for the 9 9 to fly up carrying the 3 3 and circle round for a few minutes. Then coming to the ground, where the 3 3 released the 9 9 and flew right away, the latter removed their wings, using the legs to push them forward, until they dropped off. The L. niger ? ? on rising into the air make a deep buzz not unlike that of a wasp. The dealated ? ? always avoided each other, and many sought out holes in the ground, where they disappeared, their presence being betrayed the next day by little craters of sand. Wherever there was a nest of Lasins niger the \(\forall \) came out in swarms, capturing and killing the dealated 2 2 of all three species, principally Lasius flarus and L. niger, the latter presumably both strangers and friends (as I have shown experimentally). The stronger and more active umbratus 2 2 more often ran the gauntlet in safety, and it is to the behaviour of these latter, whose parasitic habits on niger are well known, that I wish to draw attention.

In recording the observations and experiments (1895-1912) which established the habits of Lasius umbratus ??, I repeatedly noted that the newly dealated ?? are frequently found carrying dead Lasins and devours it, but is friendly to any others that are subsequently introduced. Now out of several hundred umbratus ? ? observed on August 8th, at least 50% carried a dead niger \( \neq \) (one carried a \( \delta \)). On many occasions I watched \( \chi \) \( \text{capture and kill their } \( \neq \) \( \text{That} \) the dead & was of importance to the & is clear from the fact that when harried, and even when picked up with forceps, the ? still held her prey. When confined in a box the ? invariably devoured the \$\noting\$, leaving nothing but the head, legs, and part of the thorax.

Seeing this phenomenon on such a large scale strengthened my theory that it is an important factor towards the successful adoption of the  $\mathfrak D$  by a niger colony. The devouring of the  $\mathfrak D$  would serve two purposes; first, it would enable the  $\mathfrak D$  to exist during her search for a suitable colony, since she has not the supply of fat which enables the self-founders to exist for months without food from external sources; and secondly it would cause the  $\mathfrak D$  to lose the numbratus odour and acquire that of niger, and thus favour her chance of acceptance by a colony of the latter. Or, looked at from another point of view, the act might set in motion a process transforming the  $\mathfrak D$  from her present condition of antagonism towards all strange ants, into one of friend-liness for, and attraction towards, L. niger.

Though repeated experiments have shown that it is only queenless or small colonies that normally accept a parasitic queen, I found a marked difference in the behaviour of a powerful colony (queen and several thousand  $\mbeta$   $\mbeta$  of L niger towards L numbratus  $\mbeta$   $\mbeta$  that had devoured niger  $\mbeta$  , and those that had not. In the latter case the  $\mbeta$  were killed at once, but the former were approached in a very different manner, and were not attacked until some time had elapsed and they had penetrated into the centre of the nest. Every one of fourteen small queenless colonies of niger accepted numbratus  $\mbeta$   $\mbeta$  readily, three of them taking two each, and another three. In all but one of these latter four cases the  $\mbeta$   $\mbeta$  fought, only one surviving in each; and numerous  $\mbeta$   $\mbeta$  put in pairs and threes always fought, the strongest killing the others by cutting them in two at the pedicel by sawing movements of the mandibles, as before described.

It is very probable that the bodies of these parasitic ? ? are attractive to the ants, as appears to be the case with Anergates, which also sometimes captures and holds, but does not kill, a host ¥ after impregnation; at any rate, they have an attraction for the myrmecophilous beetle Clariger testaceus not possessed by L. niger or L. flavus. In two nests of L. flavus containing two Clariger and one queen, and fourteen Clariger and five queens repectively, and in one of niger with one queen and one Clariger, the beetles were never observed to cling to the bodies of the queens, whereas in two colonies of Lasius niger with a L. umbratus queen and two Clariger in each, the beetles were almost invariably clinging to the gasters of the queens, and often appeared to lick the surface of the body.

## Marriage-flights of Donisthorpea species on August 8th, etc.

H. DONISTHORPE, F.Z.S., F.E.S.

When recording a marriage flight of Donisthorpea (= Lasius) nigra which took place at Folkestone on August 9th, 1911, I mentioned that marriage flights also took place at Margate and Seaview, Isle of Wight, on the same afternoon, and I stated:—"It is evident that the ants are affected by some atmospheric influence, and it would be interesting to find out over how large an area they are affected at the same time."—Ent. Rec., 24, 6-7 (1912).

The marriage flights on August 8th this year help to answer this question. In the newspapers vast numbers of winged ants are men-

tioned as having been observed at Cardiff on that date, and I have been informed of flights of *Donisthorpea* species which occurred on that day at Penge, Forest Hill, Streatham, Wallington. Woking, Beckenham, East Farleigh, Brockley, St. Helens, Isle of Wight, and Lynton in Devonshire. My son also informs me that he saw numbers of winged ants at Abbeville in France about that date.

In my garden at Putney Donisthorpea nigra and D. plava were swarming from about 4.30 onwards, and they occurred all over Fulham, Putney, and Barnes. Later in the evening I captured two decilated D. nmbrata ? ? near the entrances to nests of D. nigra in a road close by. I enclosed them in a box, when the one female killed the

other by cutting off its head.

I should be glad if any of our readers will record marriage-flights from localities and counties not mentioned in the above two notes.

In connection with the colony-founding of species of this genus I may mention that a large number of small  $nmbrata \not \not \not x$  have at last been brought up (this year) in my captive colony of D, aliena obtained at Weybridge on July 10th, 1912, which accepted a D,  $nmbrata \not x$  on

July 27th, 1913.

My Donisthorpea fuliginosa  $\mathfrak P$  died on August 29th last; she had been accepted into a colony of D. mixto-umbrata (strengthened with  $\mathfrak P$  of D. umbrata) on August 11th, 1912. All the  $\mathfrak P$  in this colony had gradually died off, so on August 27th I went to Woking and obtained a large number of fresh D. umbrata  $\mathfrak P$   $\mathfrak P$ . The D-fuliginosa  $\mathfrak P$  was accepted by the new  $\mathfrak P$   $\mathfrak P$ , she was very weak and died, as before stated, on the 29th, though not from injuries.

[Morice and Durrant have shown that Lasins, Fabricius, sinks as a homonym of the earlier Lasins, Jurine, a genus of bees. A new name being necessary for § Lasins, F., they proposed that of Donisthorpea, adopting nigra as the type [Trans. Ent. Soc. Lond., 1914, 421-

423 (1915)].—H.J.T.]

## OTES ON COLLECTING, Etc.

Phryxus Livornica in Britain.—Apparently this species is quite established in its western habitat. For some years past now it has been regularly obtained and by no means as odd specimens. Many of the specimens captured are in excellent condition and evidently have

emerged in this country.-H.J.T.

Celastrina argiolus in London.—This species appears to be getting more abundant in the London suburbs year by year. Reports are continually being made of its occurrence in fresh spots as well as notes on its reappearance where it has previously been seen. On July 26th, while walking up Holborn somewhat after mid-day, I saw a male of C. argiolus threading its way among the traffic. Of course this was a second brood specimen. In the same week specimens were frequently seen flying across my own garden at New Cross.—H.J.T.

RESTING POSITION OF EUPITHECIA OBLONGATA (CENTAUREATA).—Recently my son found on the stem of a twig of a nut-bush in the garden, about the calibre of a thin pencil, a pair of E. oblongata in cop. He was attracted by the appearance of a white "bird's dirt" enfolding the stem. The wings were stretched out in the usual "png" attitude along the stem so that the two insects were "looking each other in the face"

round the stem, and with faces so close that the costa of the two pairs of forewings were overlapping.—H.J.T. [I have since seen a single specimen of the same species sitting on a grass stem with wings stretched along the stem and body transverse to it, on the bare down at Royston, Herts.—H.J.T.]

FEEDING OF CUCULIA VERBASCI.—As there were several plants of Verbascum thapsus in the garden, and one of my visits to the chalk hills was on so cold a day that I did not even unfurl my net, I amused myself by selecting a number of larvæ of Cucullia rerbasci which this year were extremely abundant. They were put into a conservatory and fed in the sun. So ravenous did they become under the stimulus of the heat that one could clearly hear the noise of their jaws even at some yards distant from the cage.—H.J.T.

Colias edusa in 1915.—Friends in the Portsmouth area report Colias edusa has appeared in some number during the past few weeks.

-C. W. Sperring, Charlton. August 30th, 1915.

I took Colias edusa at Dorking on August 28th.—A. E. Tonge, Reigate.

### SCIENTIFIC NOTES AND OBSERVATIONS.

The Pine Processionary Caterpillar.—Monsieur Étienne Rabaud has a short paper in the Annales of the Entomological Society of France, for 1915, p. 165, on certain points in the behaviour of the larvæ of the Pine Processionary, Thanmatopoea pityocampa, Schiff. (Read February 24th, 1915.)

He appears to establish that temperature is a very important element in determining many of their habits. His observations appear to have been completed at Amélie-les-Bains, etc.; though he does not say so, one supposes they were all made in the South of France. He refers to the observations made by Reaumur, Fabre, and Perris. He cites from them and from his own observations that a temperature of 26° Fabr. kills larvæ outside the nest, of 20° kills those inside the nest near its surface, and at about 10° Fabr. nearly all perish.

He finds that the nests are placed on the southern side of the trees and that the larvæ, in feeding, when there is a choice, attack the branches on the southern side. Further, they eat first the terminal needles, but though he speculates on the matter, says nothing definitive

in explanation of this choice.

One may, however, reasonably suppose that the well-being of the larvæ is favoured by getting their food as near the nest as possible. By eating first the terminal needles, they clear downwards, and the result must be that when a larva on leading the way out to feed, finds the lower portion of a branch or twig cleared, he goes no further that way, recognizing that all beyond has been eaten, incidentally saving an unnecessary journey. If, however, the lower needles were often eaten first, it might happen that the further ones would escape altogether, with the result that branches further from the nest would have to be visited, whilst these more accessible leaves still existed unused. This would be the result if basal or terminal leaves were attacked first indiscriminately. Had the instinct been to eat the basal ones first, it must have arisen from some advantage derivable from such an instinct, but it is not easy to see what that could be, and in fact, if such advantage does exist, it has not been definite enough to produce an effect

against the weight in favour of the actual habits of eating the ends first.

The excursions from the nest for feeding are made at night, but when the nights are cold, say 28° to 41° Fahr., the larvæ do not come out, but starvation, if the cold nights continue, has its effect, and the larvæ will then come out and feed in daylight, if it be a little cloudy.

M. Perris' observation referred to seems to show that starvation, when it results from the vast numbers of the larvae having cleared away all the needles of the trees occupied, compels the larvae to adventure long journeys, in which a frosty night often catches them to their extirpation.

When after feeding they return to the nest, they do so with great certainty. M. Rabaud leaves the question of how they do so uncertain, he recounts certain observations that demonstrate that they return easily when there is no silken way for them to follow, so that this

usually accepted explanation fails.

He ends the paper with some remarks on the processionary instinct. He says the origin of the instinct is certainly obscure, and even seems to involve a decided danger, he says other social caterpillars disperse over the food plant and return without any processionary procedure, and that individual larvæ of *T. pityocampa* find the way home quite easily.

He appears to study the point entirely with reference to the feeding larva, and therein misses what seems to be the real advantage secured

by the processionary instinct.

This instinct entirely governs the larva at one very important point in its life, that is when it finally leaves the nest and goes to find a place for pupation. It is then that they may be found in procession, by day as well as by night, and when larvæ from two different nests readily combine in the same procession.

That the larvæ should keep together in considerable numbers is of the greatest importance, because they enter together some cavity under rubbish, or even underground, and spin their cocoons together in a

close mass.

It is, no doubt, for this event that natural selection has brought the habit to the perfection we observe. The possession of the same instinct in the earlier feeding stage is probably due to the tendency of any such habit or instinct, or for that matter colour or plumage, to appear earlier in the ontogeny than the point at which it developed, a result only restrained, if at these earlier stages it is disadvantageous. In the case of the processionary caterpillar there is nothing to prove that the instinct to follow a leader is injurious to the feeding larva, and it is probably even useful, generally, to a larva, who realises, may we say, knows (though the knowing is not exactly of the human, conscious, type of knowing), that a certain region of the tree is stripped of foliage and leads his fellows to new pastures.

It will of course be evident that a larva, unaware of these circumstances, might happen to lead and might lead wrong, as there is no selection of a leader, but only that all follow the one that happens to

go first.

But, specially also, there are comparatively rare, but not perhaps infrequent, occasions when a tree is completely denuded, from being small or from having many nests, and it becomes imperative for the larvæ to leave it and find another. In order to build a nest there they must all be together, and for the whole brood to fail to find a fresh tree would not be more disastrous than for all to find trees, but only two or three larvæ to each new tree, quite unable therefore to spin a new nest. The habit of pupating gregariously, at a distance, often very great, from where they fed is, then, why the processional habit developed. It is a sine qua non, without which they would inevitably scatter helplessly. As explaining the processional procedure we accept the gregarious pupation as a fundamental fact, equally important in this regard, whatever may be its cause or object. That there is such a cause or object there can be no doubt, and one can speculate what it may be. Various habits and structures of pupe, almost always refer to protection from enemies, and this gregarious habit probably has that object. If so, our enquiry is narrowed to the question, How?

They are certainly protected by the circumstance that the irritating hairs which make the processionary larvæ so dreaded are loosely worked into the outer layer of the cocoon, they retain all their irritating properties but are so easily disturbed and float about, that to handle the cocoons is a more unpleasant experience than to deal with the larvæ.

The massing of the cocoons makes it certain that any marauder will suffer, possibly before he has done any mischief, but unquestionably before he has injured more than a pupa or two, and the rest will escape, nor will a second attack by the same or another enemy be likely to do any further mischief. A solitary cocoon, on the other hand, might easily have the stinging hairs rubbed off, or not recognised as injurious till the pupa had been fatally injured.

Something of this sort will probably explain why the massing of the pupe has been declared by natural selection to be the correct procedure.—T. A. Chapman (M.D.), Betula, Reigate. August 9th, 1915.

AGRIADES CORIDON, PODA (ROYSTON FORM).—It may be of interest to record that I received eggs of this form from Mr. Newman last autumn, and though, from inattention and other faults, I only reared sixteen specimens, they present results that possibly bear on this curious form of A. coridon. The two outstanding peculiarities of the Royston form appear to be the excess of females, and more extraordinary the frequency of andromorphous specimens amongst these females, for details of which we are indebted to Dr. Cockayne.

The sixteen specimens I reared were one male and fifteen females, a remarkable preponderance of the latter, greater than any I have had to explain in any other species by any hypothesis of a greater mortality of males in earlier stages. Though these females present several nice forms, I do not detect in any of them any andromorphous tendency.—ID. Angust, 1915.

Celastrina argiolus in america.—In the Ent. News for July is the following elucidation of the multiplicity of names which have been ranged around the form of Celastrina argiolus in America, by Prof. H. Skinner. He agrees with the view that pseudargiolus of the American continent is only a western form of the argiclus of the European continent, since the genitalic work of Mr. R. C. Williams confirms it. The list is as follows:—

Argiolus, Linn.

var. pseudargiolus, Bdl. Lec. (1833). neglecta, Edw. (1862).

var. Lucia, Kirby (1837).

violacea, Edw. (1866).

intermedia, Streck. (1878).

marginata, Edw. (1883).

cinerea, Edw. (1883).

fumida, Scud. (1889).

pseudora, Scud. (1889).

argentata, Fletch. (1903).

quesnellii, Cockle. (1910;.

var. Nig, Streck. (1878).

nigra, Edw. (1884).

var. echo, Edw. (1864). Pacific Coast.

arizonensis, Edw. (1884).

var. NIGRESCENS, Fletch. (1903). Pacific Coast, from wintering chrysalids.

var. Gozora, Boisd. (1870). S. of the U.S.A.

The writer says that each of these names represent slight differences, but adds, "I see no advantage in retaining so many names for slight differences, as they are often very confusing and often take many hours of patient study to find out what they mean."—H.J.T.

#### CURRENT NOTES AND SHORT NOTICES.

Russian entomologists are suffering from a shortage of pins. The Caucasus Museum, however, is better off in this respect, since the Director, Colonel Kaznakov, on arriving in Lvoff, secured the entire stock in the town, several thousands, and sent them to Tiflis.—M.B.

There are some valuable collections in Lvoff, which were in danger of being ruined by the severe winter frosts owing to shortage of fuel. The sympathy and influence of Colonel Kaznakov secured a supply of

fuel, and the museum was saved.—M.B.

The authorities at the South Kensington Natural History (British) Museum are much in want of a quantity of specimens of the two species Triphacna promuba and Tortrix viridana. The condition of the specimens does not matter as to bodies, head, etc., so long as the hindwings (yellow) of the former and the forewings (green) of the latter are intact. The specimens should be sent or given to Mr. J. H. Durrant, British Museum (Natural History), South Kensington.

Dr. Cockayne has gone abroad on Admiralty business and will

probably be away for the next few months.

Some time ago we called attention to a very important exhibit at the British Museum (Natural History) dealing with the Army Biscuit Enquiry which Mr. J. H. Durrant, F.E.S., and Lieut.-Col. W. W. O. Beveridge, D.S.O., R.A.M.C., had been undertaking. We understand that the practical use which has been made of the facts elicited, and the results obtained in this enquiry, has proved of such enormous value to the government authorities that by request the materials of the former demonstration are being re-exhibited in the hall of the museum with additional items. It is significant to read the new announcement in comparison with the former one. The first, 1913, said:—"It is hoped that the researches now being carried out jointly by the War Office and the British Museum (Natural History) may ensure the pro-

tection of Army Biscuit from the possibility of such attacks by insects in the future." The second, 1915, says:—"The researches which have been carried out jointly by the War Office and the British Museum (Natural History) have ensured the protection of Army Biscuit from the possibility of such attacks by insects in the future." The italics are

ours. Nothing succeeds like success.

On July 10th the Entomological Club held one of its successful meetings at the "Hand and Spear," Weybridge, under the presidency of Mr. G. T. Porritt, F.L.S., F.E.S., of Huddersfield. Four of the eight members of the club were present—Mr. G. T. Porritt (chair), R. Adkin, H. Donisthorpe, and A. Sich. The guests were Messrs. J. Platt Barrett, G. C. Champion, R. W. Lloyd, W. J. Lucas, B. H. Smith, Hy. J. Turner, and H. Worsley-Wood. After an early supper an adjournment was made to the lawn of the hotel, where a very pleasant evening was spent.

It is many years since we have inspected the one-time famous Doubleday Collections of insects which were deposited in the Bethnal Green Branch of the South Kesington Museum by his executors. These collections consist of 106 drawers of British Lepidoptera arranged in the exact order in which they were left by him at his death, and 31 double drawers of Extra-British European Lepidoptera, also arranged as regards species as left by him, but in genera according to the then Staudinger's List. The collections still appear in very good condition and the circumstances under which they are consultable are quite adequate. The attendance book shows that the series are continually being consulted, a fact which we are sure would be most gratifying to the famous lepidopterist could he know. The catalogues dealing practically with every specimen are most useful for reference. One can definitely state which drawer one wants and have it brought without delay by the courteous attendant. This is as it should be.

[Since writing the above we were astonished to hear that the collections have been suddenly transferred to the British Museum, South Kensington. It is really too bad that so useful a local collection should be engulphed and lost in the immense mass of material in the

central museum.

There are 30 beautiful specimens of the British Large Copper (Chrysophanus dispar) in the Doubleday collection, three of them being the types of ab. cuneiger, Tutt, \$\xi\$ s. The total dispar in the museum is now made up as follows:—

British Museum (Brit. Colln.) = 26

British Museum (Gen. Colln.) = 18 and 1 Brit. rntilans.

Walsingham Collection (4+2) = 6Bankes Collection ... = 13 Doubleday Collection ... = 30 Buckler Collection ... = 2 (poor)

Total ... =95 + 1 rutilans.

The sixtieth Annual Exhibition of the Royal Photographic Society of Great Britain is now being held at the Gallery of British Artists, Suffolk Street, Haymarket. Mr. Hugh Main, B.Sc., F.E.S., carries off one of the medals for a set of eleven photographs of the "Metamorphosis of the Dor Beetle, Geotrapes stercorarius." In addition he

exhibits sets of photographs of the life histories of Hibernia leucophaearia, Dytiscus marginalis, Cassida equestris, Timarcha tenebricosa, Lampyris noctiluca, Pterosticlus madidus, Eryx ater, Aromia moschata, Megachile centuncularis, Vespa germanica, Pimpla instigator, Chrysopa flava, and Agrion puella, all of which deserve notice. Mr. C. W. Colthrup has a small exhibit of his favourite study of the resting attitudes of moths. Mr. A. W. Dennis also has a set of photographs of the Wood ant, Formica rufa. Mr. Hamm, of Oxford, has several autochrome slides of the resting attitudes of butterflies. There are many other sections of the exhibition well deserving of mention, which we ask our readers to see for themselves. The rooms will remain open until October 2nd.

In the Ent. Record, vol. xii., p. 5-6 (1900), Dr. Burr gave an interesting account, with portrait, of the great Orthopterist Dr. Brunner von Wattenwyl. We have just heard of the news of his death, which took place at Vienna on August 24th, 1914. He was born in

1823, and was a member of one of the oldest Swiss families.

The Entomological Society of France at its bi-monthly meetings announces news from members who are with the army. From the Bulletin of the April-May meetings we see that Dr. M. Bedel has been mentioned in despatches, M. Balestre is now convalescent, after being severely wounded at Saint Mihiel, MM. Georges de Bary and Xavier Roques have died of their wounds, M. Albert Lacrocq, wounded at Eparges, has recovered, M. Gaston Roché has been killed, and M. R. Decary, seriously wounded at the Marne, is now convalescent.

In the April numbers of the Bulletin de la Société Entomologique de la France, M. Chrétien has a series of very interesting notes on Callophrys rubi, Heodes virgaureae, Loweia alciphron var. gordins, Plebeius argyrognomon, Latiorina orbitulus, Polyommatus eros, P. escheri, and Capido sebrus; the Abbé J. de Joannis discourses on the Law of Priority; and there are several systematic articles with illustrations on

new and little known Coleoptera.

In the Ent. Mo. May. for June Mr. E. Ernest Green describes two Coccids as new to science. Pseudococcus sphayni was discovered by Mr. Donisthorpe in a nest of Formica picea in Matley Bog, New Forest, amongst sphaynum, and P. gahani was found on Ribes sanguinea in London. In the same number Mr. R. S. Bagnall further describes a Neuropteron new to Britain, Conventzia cryptoneuris, which he announced in the new periodical, the Vasculum, a short time ago.

In the Canadian Entomologist for June, the monthly article on Popular and Economic Entomology deals in a most interesting and living way with "Some Manitoban Water-Beetles." There are also descriptions of several new genera and species of Tineina from the

neighbourhood of Cincinnati.

In the Naturalist for June is found a long Report of the Cumberland Nature Reserve, the Entomology of which is described by an old correspondent of ours, Mr. F. H. Day. He lists 15 species of Butterflies, 122 species of Moths, and 257 species of Beetles. The area now preserved is Kingmoor Common, which was formerly a locality much frequented by collectors.

The first part of the Transactions of the Entomological Society of London for 1915 was issued in June. It contains twenty plates, four of which are coloured, with 176 and xlviii, pages. Dr. Dixey con-

tributes a paper on "New Species and Subspecies of Pierinae" in the Hope Collection, Oxford. G. C. Champion, "Revision of the Mexican and Central American Telephorinae with descriptions of new Species." J. J. Joicey and W. F. H. Rosenberg, "Descriptions of New Species of the Pierine genera Catasticta and Daptoneura." Dr. H. Eltringham, "Further Observations on the Structure of the Scent Organs in certain male Danaine Butterflies." The *Proceedings* are even more interesting and important than usual. They contain (1) a valuable paper, "The Mimetic Theory—A Crucial Test," by Colonel N. Manders, F.Z.S., F.E.S. (who we are grieved to say has just been killed in the Dardanelles), and a very weighty reply by Mr. C. F. M. Swynnerton, "A brief Preliminary statement of a few of the Results of five years" Special Testing of the Theories of Mimicry," with the discussion which ensued; (2) "Life History of Agrotis lucernea," by Mr. Lupton; (3) "The African Megaponera foetens and its raids upon Termites," by Prof. Poulton, based upon letters received from his various correspondents in Africa; (4) "Butterflies from Biak, the largest of the Schouten Islands north of New Guinea," by Messrs. Joicey and Talbot; (5) "Brenthis pales and B. arsilache from Norway," by Mr. P. A. Buxton and others; (6) "A hybernating Pupa of Pyrameis atalanta," by Mr. L. W. Newman; (7) "The Gregarious Habit during Hybernation of Musca corvina," by Prof. Poulton; (8) "Records of the Nuptial Flight of Butterflies (British)," by Dr. F. A. Dixey; and many other smaller items concerning exhibits, and communications to the Society.

The Annual Report of the Entomological Society of Ontario for 1914 contains, among other interesting items, (1) Photographs of the Rev. C. J. S. Bethune, one of the great pioneers of Entomological Work in the Colony, of Dr. Williams Saunders "one of the first to realize the practical significance of entomological work," of Henri Fabre the author of "Souvenirs Entomologiques," and of Hy. H. Lyman the great helper in all natural history work in the colony who was lost in the wreck of the "Empress of Ireland"; (2) An account from various sources and with several illustrations of the great 1914 outbreak of the "army worm" Cryphus (Heliophila) (Leucania) unipuneta and its devastations in pastures and fields of cereals throughout the country; (3) An interesting summary of the Life and Work of the great French observer, Henri Fabre; (4) An article on "Mountains and Hills" by that ardent lover of nature, the Rev. Dr. Fyles; and (5) the various reports of the sectional societies, economic work, and Canadian records, complete a useful volume of 152 pages and many illustrations.

The June quarterly part of the Journal of Entomology and Zoology (Pomona, California, U.S.A.) is mainly filled with articles on Entomology. Perhaps one by Edna Mosher is the most important, an investigation into the "Homology of the Mouth Parts of the Pre-

imago in the Lepidoptera."

#### REVIEWS AND NOTICES OF BOOKS.

The Proceedings of the South London Entomological and Natural History Society.—1914.—With 10 plates and 1 map. Published at the Society's Rooms, Hibernia Chambers, London Bridge. Price 4s.—Although the matter for this admirable annual always must be

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completed by the last week in January it seems rarely that the volume appears before the middle of May. An earlier issue would be much more encouraging to the authors of papers who may wait many months for their publication. The annual issues of this progressive society for the past thirty-five years lies before us, and we can truly say that it is a lasting record of progress in the carrying out of the object of the Society, viz., "The diffusion of Biological Science by means of Papers and discussions and the Formation of Typical Collections." It is a society without vicissitudes: any changes which have come about have always been changes of advance. No less than seven of the present members were members in 1880 and of these three are still almost invariably present. More than fifty have been on the roll for a quarter of a century at least.

The volume consists of three sections. The first contains all the official information, Council's Report, Balance Sheet, etc. The second part consists of the papers read during the year, concluding with the annual address. The third section contains full accounts of the proceedings at each of the twenty-three meetings with numerous short notes contributed by different members, and the reports of the field-

meetings.

Probably the most valuable paper, one of more than local interest, is that on "The Genus Melitaea," by the Rev. Geo. Wheeler, M.A., F.E.S., in which the groups of species, and the racial and local forms from the whole of the Palearctic and Nearctic Regions are dealt with largely from a philogenetic point of view. Mr. Colthrup gives his interesting experiences in "Photographing Birds on a South Coast Beach." Mr. R. Adkin gives a summary of all that is known of the occurrence of "Colias edusa in Britain," dealing with the species from a historical point of view, and passing on to a consideration of its migratory habits, illustrating his remarks with a map of Europe on which suggested lines of migration are marked. Mr. K. G. Blair, B.Sc., contributes a paper on "Luminous Insects," summarising the main facts known of this subject in the various groups, and giving an account of his own experiences in North America among the "flashing" or "lightning-bugs." Dr. E. J. Salisbury, D.Sc., gives a summary of the main facts of his lecture on "The Sea Shore and its Plant Life." Mr. W. J. Lucas gives a further instalment of his contributions towards a knowledge of "other Orders" in "British Long-horned Grasshoppers," illustrating his account with three plates containing figures of all the species dealt with in the paper. Mr. R. Adkin contributes a further paper, "Some Lepidopterous Pupal Habitations and some reminiscences," a most interesting summary of the varied directions of larval labour, and illustrated by four plates of figures of the structures and one plate of microscopical details.

Not less interesting are the detailed accounts of the meetings. Among the more useful notes contributed we may mention. (1) Mr. A. E. Gibbs on the American species of the genera Melitaea and Phyciodes. (2) Dr. Chapman's record with two plates of the abundance of mistletoe on Scots pine in the Dauphiny Alps. (3) Mr. Step's notes on the Aleurodes. (4) Mr. Turner's summary of the variation shown in the races of Erebia pronoc. (5) Notes by various members on the Mite, Tetranychus lintearius. (6) Mr. A. E. Gibbs, an account of the variation in several species of Parnassius in the Palearctic

fauna. (7) The contributed notes and discussion on the genus Anthrocera by various members, which take up some twenty pages of the letterpress, and form a most useful and important summary.

(8) Mr. A. E. Gibbs, "The giant sawfly and its parasite."

Only four Field Meetings were held during the year, riz., at Ranmore Common, Beaconsfield, Ascot, and Byfleet, reports of which with records of captures, notes, etc., are included. There is also a Report of the Delegates to the South-Eastern Union of Scientific Societies, giving an interesting account of the doings at the very successful Bournemouth meeting.

The volume is extremely well got up and quite worthy of the Society. Possibly one could find small points to improve in future, if one felt in carping mood, but it is not worth while to be little what is

generally so excellent.

#### SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

June 24th.—New Member.—Mr. Fagg, of Lewisham, was elected a member. Aberrations of European Butterflies.—Mr. Edwards, for Mr. Dawson, exhibited several remarkable aberrations of European butterflies, including Polyommatus icarus with elongated marginal markings on underside; Melitaea dictynna with underside forewing all markings blurred and hindwings markings extensively radiated, the upperside almost wholly black suffused; a melanic Brenthis pales; a a xanthic form of Epinephele jurtina; Polyommatus hylas, with very pale marginal area on underside; and Melitaea didyma with radiated undersides. He also showed nests of the humble-bee, Bombus lapidarius with imagines, from Worcestershire. Coleoptera from the New Forest.—Mr. West (Greenwich), the principal species of Coleoptera taken by him in late May and early June in the New Forest including Leptura scutellata, Mesosa nubila, Clytus arietis, Grammoptera praeusta, Elater sanguinolentus, E. miniatus, Agrilus viridis, Colydium elongatum, Aphodius niger, etc. Exhibition and discussion of L. Quercès.—Messrs. B. Adkin, R. Adkin, Hy. J. Turner, A. E. Gibbs, and Cowham, series and specimens of Lasiocampa quercus, and Mr. B. Adkin subsequently read a paper on the species. Mr. Gibbs, a male with complete female coloration. Mr. Cowham, a female from Epsom which was two years in pupa and had emerged in May. It was of the var. callunae. Another example had the discoidal on the left forewing duplicated.

July 8th.—The President, in the chair. Mr. G. B. Pearson, Russell Sq., W., was elected a member. There was a special exhibition of Malacosoma neustria, M. castrensis and Cosmotriche potatoria, by Messrs. B. Adkin, R. Adkin, S. Edwards, A. E. Gibbs, Leeds, Sperring and Brooks, which included series of numerous local races, and many aberrations. Mr. B. Adkin then read a series of notes on the variation attainable in the three species. Mr. B. S. Williams exhibited a bred series of Bupalus piniaria from Leith Hill. Mr. West (Ashtead), examples of Triaena psi and T. tridens and asked if members could point out definite markings whereby the imagines could be correctly distinguished.

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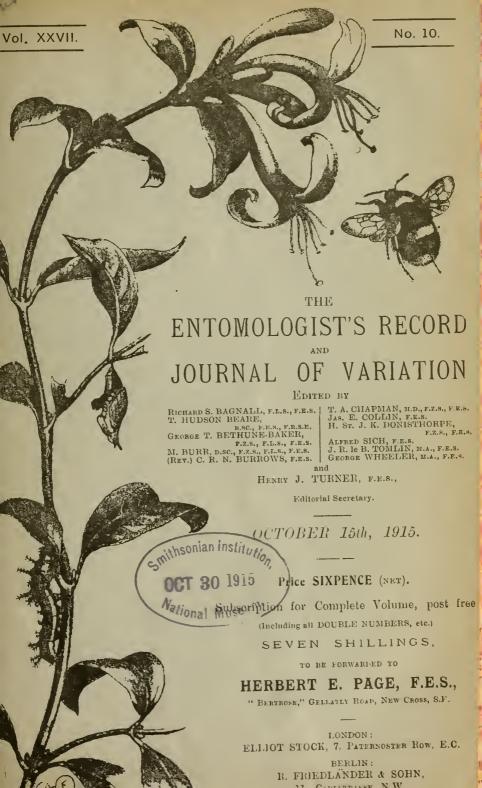
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#### A Butterfly Holiday in Great Britain.

By GEORGE WHEELER, M.A., F.Z.S., F.E.S.

It is possible that some sense of shame ought to accompany the admission of a "butterfly holiday" this year, but the combination of about half the work of a Central London Parish with the Secretaryship of the Entomological Society (to say nothing of other occupations), does render a holiday, even in war time, a somewhat pressing necessity, and finding it of course impossible to spend that holiday abroad, I made up my mind to utilize it entomologically by seeking some of those forms which are peculiar to our island, in particular the Cornish Lycaena arion, Plebeius argus (aegon) var. masseyi, and the Durham and Scotch forms of Aricia medon. I hoped also to obtain the typical P. argus (uegon) and the var. cretacea, so as to have the opportunity of comparing these three forms in a fairly long series, and in addition I had some expectation of acquiring British forms of Coenonympha tiphon and Erebia epiphron. I had not, however, with one exception, a day without rain, and the one exception only gave the variation of a fog so thick that for most of the day it was impossible to see across the road; whilst only once did I have as much as two hours of consecutive sunshine, and, though there was a little on nearly half the days, it was

generally confined to gleams of a few minutes' duration.

Leaving London at 1 o'clock on Monday, July 5th, I reached Bude soon after 7.30 in the evening, and here through a mistake of the porter's I was carried off seven miles in the wrong direction, and landed at a farm in Morwenstow. This was rather unfortunate, as the farm for which I was bound was some two miles from another in which Mr. A. H. Jones and Mr. Earl were staying, and I knew they were leaving on Wednesday morning, and further, there was a little sunshine on Tuesday morning which we had to waste in our thirteen miles' drive. An attempt to visit my friends on Tuesday evening was cut short by torrents of rain, and I was left to my own devices to find a ground for arion. Wednesday and Thursday were, with a short interval on the latter day, hopeless for hunting, but I searched about for likely spots. It was some time before I found any thyme at all, and when at last I did so, there was no sign of the necessary anthills, and I took nothing but Melanargia galatea, Aphantopus hyperantus, a fine dark form of Epinephele jurtina, and a single specimen of Hipparchia semele. On Friday morning a very welcome addition was made in the form of a single fresh specimen of the second brood of Leptosia sinapis, my first experience of this species in England. As the afternoon showed a promise of more sunshine, I started at about 1.30 p.m. for the farm in which my friends had been staying, and where I knew they had met with some success. Within a quarter of an hour of starting, however, I found myself in a steep field full of ant hills all covered with thyme, so felt that if arion was to be got anywhere in the neighbourhood I should hardly find a more likely spot. In a few minutes I discovered that it was by far the commonest thing in the field, though getting over, and I had to let out at least as many as I kept. I succeeded, however, in the hour or so that the sunshine (somewhat intermittently) lasted, in acquiring a short series of a dozen specimens, mostly in fair, and one

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or two in excellent condition. A few *Polyommatus icarus*, not in good condition, and a single *Coenonympha pamphilus* complete the Cornish bag, since *Pieris rapae* and *P. napi* were too worn to be worth taking.

On Saturday the 10th we left for Lyndhurst where we arrived in the late afternoon, our quarters at the "Crown" affording a grateful contrast to the roughness and rats of our late abode. A tramp through an open bit of the Forest on the following afternoon showed that, despite total absence of sun, it was possible to kick up a few fresh specimens of typical P. argus (aegon), and a sufficient number were obtained on the following day, which was hot, though there was but little sun till the late afternoon. Butterflies were however very scarce, with the exception of E. jurtina. A very few Dryas paphia (no var. ralesina) and still fewer Argynnis adippe put in an appearance, Limenitis sibylla was also very little in evidence, and such as were to be seen flew high until between 4 and 5.30 p.m., when the sun was several times out for as much as ten minutes at a time, when they came down as usual and sat on the moist wood-roads in some numbers, but were difficult to see and not in first-class condition when taken.

As I had to be in London for the Tuesday and Wednesday nights we returned home the following day, and on the Wednesday I made an expedition to Cuxton in search of P. argus (aegon) var. cretacea, but alas! the sun went in just after I arrived at the station and the rest of the day was given up to cold wind and occasional rain, and I

returned home without a single specimen of any sort.

On Thursday, July 15th, we started for Witherslack about 1 o'clock, arriving at Grange-over-Sands in the early evening, and finding a very comfortable "taxi" at the station which quickly took us to the "Derby Arms," where we remained very comfortably for the next eight days. Our hostess was most kind and attentive, and during part of the time we had the further advantage of the company of Messrs. Mansbridge, Johnson and Crabtree, to all of whom this locality is so well-known, and by whom, especially Mr. Johnson who stayed longer than the others, I was introduced to the special haunts of various species, whether flying at the time or not. But the weather! Rain and wind were the order of the day, with scarcely ever a gleam of sun; still, I managed by hours of tramping the · mosses to obtain a fine series of P. argus (aegon) var. masseyi, not however more than I could easily have got in an hour of hot sunshine. They were however well worth the trouble and exertion and nothing to compare with them is to be found out of England, or in England except in the northern "mosses." The ?s are all much suffused with blue, the hindwings often to the border, and the amount of orange on the upperside varies as much as in other forms of the species; the dark part of the wings is nearly always black, not brown, as in Agriades thetis ab. urania. I was fortunate enough also to obtain three aberrations among the &s; one with leaden-coloured hindwings on the upperside, very fresh and perfect, one with some coalescent spots on the underside hindwings (ab. costa-juncta), and one with most of the spots of the underside hindwings elongated, this specimen however having unfortunately lost a piece out of one of the hindwings. The 3 s are not at all violet-blue on the upperside, but rather of the blue of Glancopsyche cyllarus, with a very narrow black

border and a series of black spots at the edge of the hindwings; when quite fresh they are nearly white on the underside, like the secondbrood in Central Italy, and approaching the var. hypochiona of the Pyrenees, except in size. I was too late for C. tiphon, and the only good specimen I took was a ?, though I found a few passable examples of both sexes. There was never a day when it was possible to go to Ambleside, and in any case I was too late for E. eniphron. I took both the Argynnids, but they were really over and not worth keeping, as was also the case with the 1st brood of P. icarus and mostly with A. medon, which is single brooded here. I was also between the broods of C. pamphilus, of which I only saw one  $\circ$ . E. jurtina was common and fine, with very pronounced yellow bands on the underside, sometimes even in the 3 s. 11. semele was flying but did not seem common. Indeed, except in the "moss" in which P. argus (aegon) occurred, one might walk for hours without seeing a butterfly, and the only moths that were common were Ematurga atomaria and a pale Crambus (perlellus, I think). An occasional Augiades sylvanus was to be seen, and Pieris napi was fairly common, large, and well-marked. Bupalus piniaria was pretty frequent among the pines, which also produced a few Semiothisa litura; on one of the the mosses there were also a few Selidosema ericetaria (plumaria) of both sexes. But even in such weather as we experienced Witherslack was a delightful place, and I sincerely hope to visit it again. The journey across to the Durham Coast, though only about 80 miles, took 85 hours, of which 45 were spent in waiting at stations, and necessitated 5 changes. We put up at the "Blackhall Rocks" Hotel, which has the advantage of being within ten minutes of some of the best ground for the various forms of A. medon for which this coast is remarkable, and is in fact the only place in which it is at all possible to stay. I had been kindly turnished by Mr. J. H. Harrison with a plan of the coast, pointing out all the available denes and telling me which forms I might hope to find in each. Here again the weather was very bad, some days being hopeless from morning till night, but I was fortunate enough to get some very nice forms, almost all in the dene nearest to the hotel, some ten minutes' walk to the north of it. I made two expeditions to the three northernmost denes (about three miles off), of which Mr. Harrison spoke very highly, but on each occasion only saw one worn specimen in the second dene, and none at all in either of the others. These denes, at this time of year at any rate, contain four species of butterflies only: -P. icarus, A. medon, C. pamphilus, and E. jurtina, except for a very occasional Aglais urticae. P. icarus is really magnificent both in size and colour, the 3 s reminding one, on the upperside, of the specimens from Central Italy, but the ?s are all considerably suffused with blue, which I have never seen in Central Italian specimens. Stephens' definition of medon var. salmacis is most unfortunate, as the white discoidal on the forewings is certainly commoner in the 3 (ab. similis) than in the ?. Many of the specimens of this species here are simply small A. medon, with a slight tendency towards obsolescence of the spots on the underside hindwing. White scales around a black discoidal (so frequently, and quite erroneously, referred to as var. salmacis, the original description of which absolutely excludes such specimens) did not very frequently appear, though it occurred in both sexes, but I obtained three magnificent examples of ab. redrac,

one being of the extreme form in which the central row of spots is entirely wanting on the fore- as well as the hindwings, and also several well-marked examples of ab. semi-redrae; I also took a lovely little example of ab. inclara in which both fore and hindwings are of the form costa-juncta. I took two good specimens, 3 and 2, of Adscita geryon on the 26th, but saw no more. Deneholm and Castle Eden Dene are entirely in possession of the military, and quite inaccessible; moreover, just now the inhabitants of Blackhall Colliery Village-at any rate the boys—are spy-mad, and my sister-in-law, Miss Swaine (well-known to many entomologists), being taken by them for a German spy, was, during my absence at the far denes, stoned for nearly half a mile along the beach with missiles as large as one's fist; fortunately, however, their aim was a bad as their manners, and she escaped unhit. We remained a week at Blackhall, and on Friday, July 30th, left for Kinghorn on the coast of Fife. This is also in the hands of the military, and admission to the shore, on the way to which is the best place for A. medon var. artaxerres, is only to be gained by a pass, which I was unable to secure till 8 p.m. on Saturday, which was very unfortunate, as the only sunny hour was latish on Saturday afternoon. It was not till my last day there, the following Wednesday, that I had a chance of trying again; on that day I took five-all I saw—but they were rather past their prime. This was remarkable, as the Fife coast is generally about a fortnight later than the Durham localities. Mr. Harrison, who kindly furnished me with plans of the Kinghorn localities also, warned me that I should be late at Durham, but just right at Kinghorn, whereas almost all the Durham specimens were absolutely fresh, while all I saw at Kinghorn were the worse for wear. At Kinghorn I also took a few Rumicia phlaeas, and one or two other common species, but the great catch of this locality consists of the magnificent race of Pieris napi, which was very common even on bad days and mostly very fresh. These are rather large and very heavily marked, having streaks of black from the spots of the forewings to the outer margin, like P. manni var. rossii, the 2 s with heavy grey suffusion, especially at the base and along the inner margin of the forewings, yet not resembling var. bryoniae, since the ground colour is not yellow and the hindwings are without suffusion, which is also very slight along the nervures of the forewings when present at all.

I returned home on August 6th and have since taken two day excursions. On August 11th, I managed to put in three hours at Royston. Here two points struck me; the vastly greater proportion of \$\mathcal{J}\$ s of Agriades coridon than I have ever seen there before, amounting in some spots to half the specimens, and the number of \$\mathcal{J}\$ s which had little or no blue on them; ab. semisyngrapha was there, and of course intermediates, but the proportion of the latter was much less than usual. Mr. G. L. Keynes, and I think Dr. J. N. Keynes also, have expressed an opinion that these blue forms are commoner among the later emergences. Judging from the condition of the \$\mathcal{J}\$ s, I should say the species had only recently appeared; it would be interesting to know whether anyone collecting there towards the end of the month had found the blue forms commoner. My other expedition was on August 13th when I went by train to Horsley and walked over the downs to Gomshall. The second brood of Celastrina argiolus was common in the wood towards the top of the downs, P. icarus was well

out, the 2's varying from quite brown to quite blue, A. caridan was abundant, but the second brood of A. medon was only just beginning to emerge, and there was no sign as yet of A. thetis. G. rhamni, H. semele and R. phlacas were present but not in numbers, and C. pamphilus was common. The second brood of A. thetis is only following the example of the first this year, as is natural, in the lateness of its appearance as I saw not a single specimen of it when I was in the same locality towards the middle of June, and I have heard of similar experiences this year on the part of other collectors.

## The Type of Camponotus (Myrmoturba) maculatus, F. By H. DONISTHORPE, F.Z.S., F.E.S.

Dr. F. Santschi having asked me to examine and redescribe the insect named by Fabricius—Formica maculata—I have now done so. The ant in question is in the Banks' Collection at the British Museum (Natural History); it is labelled "Africa," and judging from what is known of the localities whence the specimens in the Banks' collection came, it probably came from Sierra Leone, or near by on the West Coast.

#### DESCRIPTION.

24 Head above and below, mandibles, and scapes of antennæ black; funiculi testaccous (unfortunately both tips of the antennæ are missing). Thorax yellow beneath; pronotum, mesonotum, scutellum, and epinotum anteriorly, blackish-brown. Legs yellow, tihiac and tasi blackish brown. Scale yellow; gaster with first three segments with broad triangular blackish patches in centre of dorsum, with narrow yellow patches on each side; extreme apical edges of segments yellow.

The puncturation of the head and body is very fine and close, that of the gaster being rather finer. Towards the base and on the declivity of the epinotum the puncturation runs transversely in a circular manner. (The specimen is somewhat dirty, and dull with age, which makes it difficult to describe the puncturation very

accurately.)

Head broader posteriorly, without any outstanding hairs beneath: clypeus a little longer than broad, strongly carinate in centre, with bluntly pointed side flaps, and a row of nine bristles on anterior border; mandibles with seven teeth on terminal border the apical one being long; frontal carinae with distinct raised ridges, gradually divergent, then rounded and convergent; frontal furrow distinct; cheeks without outstanding hairs.

Thorax: pronotum with long yellow outstanding hairs; scutellum distinct, nearly twice as broad as long; epinotum narrow, without outstanding hairs, declivity not steep. Posterior tibiae on apical half of posterior ventral surface (inner border of underside) furnished with a row of fire or six short bristles (one anterior leg and the two inter-

mediate legs are missing).

Scale narrowest at apex, not as high as epinotum, furnished with four outstanding hairs; gaster with rows of strong yellow outstanding hairs on apex and base of segments. Long. about 12mm.

Original description of Formica maculata, Fabricius [Spec. Ins., 1,

491 (1781) :--

"F. nigra, thorace postice femoribusque ferrugineis, abdomine pallido maculato.

Habitat in Africa equinoctiali. Mus. Dom. Banks.

Media. Caput magnum, atrum maxillis breuibus, multidentatis. Antennae apice piceae. Thorax compressus, antice niger, postice ferrugineus. Abdomen ouatum, pilosum, nigrum lateribus pallido maculatis. Pedes nigri femoribus ferrugineis."

Fabricius was evidently in error when he wrote "antennae apice

piceae," and really meant the scapes.

The form of *maculatus* with yellow tibiae from Egypt was considered until recently to be the type, but as we now see this is not the case, and, as Santschi has pointed out to me, this form (*i.e.*, the one with

yellow tibiae) will have to be renamed.

The maculatus group (sub-genus Myrmoturba, Forel) is a very large one, and ranges over the greater part of the world. Specimens recently given to me by Beck, which he captured in Madagascar, have been named by Forel—Camponotus (Myrmoturba) maculatus, sub-sp. radamae var. becki, and others given to me by Williams, which he took at Guadeloupe, Forel has named Camponotus (Myrmoturba) maculatus, sub-sp. conspicuus var. williamsi.

#### The Upper Engadine in 1914.

By H. J. TURNER, F.E.S. (Continued from page 168.)

The early morning of July 29th had a doubtful look, and having had two strenuous days, we decided to remain in the near neighbourhood of St. Moritz and enjoy some of the many lovely walks in the pine woods, picking up whatever insects we might incidentally come across. The forests of the district are chiefly of larch and the more local stone-pine, *Pinus cembrae*. The cones of the latter furnish the now well-known "pine-kernels," which have a pleasant flavour, and have gained some medicinal reputation. In many parts of the Alperof Europe the line of tree limit is but little above 6,000ft., but here it extends to over 7,000ft.

On the south-west side of the village of St. Moritz the steepwooded slopes are known as the Alpina, Upper and Lower, and are threaded by numerous paths giving access to various admirable spots for insect colonies, while at the top, the tree limit, is a small undulating area of heather-clad ground (a somewhat rare occurrence in the Alps), where many species of butterflies and moths are always obtainable. This area was our morning ramble. It was dull weather, with intermittent sun, and decidedly cool. In fact, one wants to be ready for any variation of weather and temperature in the Engadine. The natives say that they have "nine months winter and three months cold," a terse way of expressing a desire which may not be above possible realisation. Probably no part of the neighbourhood is more varied in its flora than these slopes. Possibly the most attractive flower to meet was the Martagon Lily. There is a considerable quantity of Fennel scattered over the slopes, and Papilio machaon was looked for, but not met with in any stage. That it occurs here, I know, as in 1907 I met with it in some numbers. The beautiful Parnassius apollo butterfly was also very abundant on these slopes in

that year, but on this occasion only one was seen. Wherever there were overhanging banks, plenty of Gnophids could be disturbed, they were also abundant on the scattered boulders and exposed cliff surfaces. In a shaded watercourse hidden by the large leaves of the Coltsfoot (Tussilago farfara) was a colony of Aciptilia gonodactyla. few Heodes hippothoe occurred of a smaller race than those met with on the previous day at Alp Grum, and with no trace of discoidal spots in the males. Erebia euryale, so extremely abundant on the same date in 1907, was seen to-day for the first time, one specimen only. In fact, during the whole of my stay I rarely saw more than one in places where I had been able to sweep up at least a dozen at once on the previous visit. Plebeius arygrognomon here was a small race, and on this date mainly females, some of which had only a trace of the orange markings on the hind-margin of the upperside of the hind-wings. A few Colias phicomone were about, but worn. Xanthorhoë montanata, a remnant of earlier date, could be disturbed. Scoparia sudetica and Cnephasia osseana (pratana) were kicked up from the undergrowth. Brenthis pales was always in evidence, as it was during my whole stay, and in every place visited, of course, in much variety as to the underside of hindwings. The beautiful little deep yellow Geometer Acidalia flareolaria was everywhere. Albulina pheretes, the deep velvety blue Lycanid, was worn, and Polyoumatus icarus was noted sparingly, the females being scarce. The walk back to the hotel was by a steep, and now unfrequented, path where the rock-rose (Helianthemum vulgare) was in profusion showing its delicate yellow flowers, with the Tormentil rivalling it in places. Still, this abundance did not remove the general impression already gained that at the time the dominant flowers both in number and species were Leguminous.

The afternoon seemed to intensify in dullness, and at times became showery, so that the collecting resolved itself into searching flower heads, disturbing herbage and pine foliage, and examining tree-trunks. The last, a very unproductive task, as nowhere have I found things so wary. Before reaching even net-length distance from the trees the settlers invariably scattered in all directions. The upper Campfer road was taken, past the beautiful figure, "The Apotheosis of the Snow," a monument erected to the memory of the artist Segantini, many of whose works are to be seen in the curious circular, tower-like museum on the opposite side of the road. This time, upon reaching the cemetery, the path to the left of the road was followed, through the thickly-wooded crest of the old moraine, which here crosses the valley, past the now deserted Villa Story to the lower Maloya road near the village of Campfer. In a boggy portion to the left of this path is a very good spot for collecting, and around here one again meets with heather. In the bog itself a large mass of conspicuously white rock has been unearthed, of quite different character to any rock I have met with elsewhere. Other smaller portions lie around. They have evidently attracted some attention, as they have been trenched around, but I have been unable to trace any particulars as to their origin and purport. The seed spikes of an Orchis, Orchis macu-

tata (?), were in abundance hereabouts.

Upon reaching the road which leads back to St. Moritz Bad a few spots of rain fell and close attention was paid to the roadside flowerheads, which here were tenanted by large numbers of insects resting or preparing to take shelter. This was particularly the case with the sheep's bit Scabious (Jasione montana) every head of which had hanging to its underside one or more Lycanids. Polyammatus icarus, Axicia medon var. alpina, the hindwings either without or almost without orange lunules, Plebeius argyrognomon, etc., were particularly Hesperids of the Hesperia alreus group were quite inconspicuous on the brown and darkening heads of the common Yarrow (Achillea millefolium) and apparently well protected. Plenty of Anthrocera filipendulae were clustered on heads of Knapweed, etc., and among them a few of the high mountain form of Adscita geryon, with an odd example of Anthrocera purpuralis. From one head was taken a very fine underside aberration of Agriades coridon, a male, in which there is no trace of any spots on the disc of all the wings, there being a diminished series of submarginal dark blotches on the forewings and very obsolescent submarginal markings on the hindwings, the place of the submarginal deficiencies being largely covered by almost white scaling; the discoidal spot in the forewings was well marked, that of the hindwings was a conspicuous white blotch; the white wedge mark of the hindwings was also quite conspicuous. This is the form called ab. corydonis by Bergstrasser and figured on Plate II., British Lepidoptera, vol. xi. (Brit. Butt., vol. iv.), J. W. Tutt, and referred to and described, loc. cit. p. 35. It differs in the forewing markings being somewhat less emphasised than in the figures. Mixed with the "blues" were several very small specimens of Erebia melampus, no larger than the C. satyrion ab. unicolor among which they were sitting, an example of Aricia eumedon, a number of Agrotis ocellina, and several Botys aerealis. On the tree trunks at the back of the road-slopes were plenty of the wary Enterhria flavicinetata and an odd specimen of Gnophos glaucinaria. A tap on the branches of the pines showed where the Satyrid was roosting, while the grass stems produced Crambus furcatellus, and one or two "plumes." I find that I have a specimen of Acidalia umbelaria taken in this spot. perhaps was the most striking incident of the afternoon's walk, when the shower began in earnest, was the assemblage of great numbers of Cleogene lutearia on the conspicuously coloured, large heads of the Mountain Bistort (Polygonum viriparum) which grew abundantly in a pasture, as it usually does in alpine pasture, by the road-side. Thousands of this brilliant yellow geometer could easily have been taken.

On July 30th some friends were intending to go over the ridge of mountains facing St. Moritz, by the Fuorcla Surlej, 9,055 ft., pass down into the Rosegg Valley and thence to Pontresina. As the Haanen See, a spot we much wished to visit, was on their way up we decided to accompany them thus far. The morning was again doubtful with intermittent sun, which allowed only fair collecting as it became colder with more wind. There are several ways of getting up to the See, about 7,070 ft., which is just at the tree-limit. The path chosen was that at the back of the Protestant Church in St. Moritz Bad, which leads by gentle ascents in the woods to the Johannisberg, and thence on the left by steep zigzags to the lake and its restaurant.

The Haanen See is a very small affair, situated curiously on a projecting portion of the mountain with steep declivities on three sides. Here I expected to get arsilache, but found the immediate neighbourhood of the lake very barren. Brenthis pales was in very small

numbers and quite typical, and with one or two dragonflies were the only Insecta around the lake. There were several nests of the social larvæ of Eriogaster arbusculae stretched on the surface of which were the inhabitants, all of them on the slightest provocation, even a shadow, jerking their heads and thoracic segments to and fro very rapidly. Presumably these movements were for protection against possible attack by ichneumons, but I should infer that it was not always very efficacious, for some larvæ that I took to rear all produced Dipterous parasites. Around this lake were a few shrubs of Arctostaphyllos uva-uvsi with the last of the flowers still remaining, and subsequently I took several specimens of the dusky little Geometer whose larvæ are attached to this plant only in the highest Alps and in Norway and Lapland, Pygmacna fusca. They were all males and from ignorance I omitted to search for the curious short-winged, long-bodied females. This species is closely allied to the genus Psodos.

A move was made across the low rocky ridge to a piece of boggy ground on the southern slope of the spur and here Colias palaeno was careering wildly up and down. One male and a white form of the female were captured with some difficulty. Plebeius argyrognomon and Coenonympha satyrion were both observed. Several Botys alpinalis, one Pyrausta rhododendralis, and a specimen of Melitaea aurinia var. merope occurred, the last somewhat larger than usual in this form. Several species of the beautiful blue Gentians were still in flower here, including the large Gentiana acaulis; and a large flowered species of

pansy, which I have not identified, was observed.

A short rest for refreshment gave one a chance to enjoy the glorious view from this coign of vantage, quite 1,100 ft. above the valley below, and just an opposite view to that described from the Suvretta path on the other side of the valley. On the right the Alps on the western side of the Lower Engadine stretching away to the Austrian frontier, nearer the peaks Piz Ot and Piz Nair, in front the wild and lonely Suvretta Thal, Piz Albana, and behind it Piz Julier with its snowy crests, then to the left the cross valley leading to the Julier Pass, and then the Alps leading on to the Maloya Pass with the Italian frontier mountains beyond. The lakes of the long valley of the Upper Engadine are seen from here to much better advantage than from the other side, St. Moritz, Campfer, Silvaplana, and Sils make links in a chain of delightful blue, spotted here and there with reflections of the white clouds above and of the dark green foliage of the pines around. The road to the Malova Pass can be distinguished for miles as it winds its way, alongside the lakes for the most part, diverging at one place only to cross between Silser See and Silvaplaner See to Sils Maria at the entrance of the famous Fex-thal.

Before returning, a small colony of the delicate Lycænid, Lationina orbitalus, was discovered and a short series was taken, including an aberrant female in which there were two rows of submarginal blotches on the forewings. These blotches appear as if they were suppressed spots of a different texture scaling to the rest of the general ground colour, and somewhat lighter when seen at some angles. Some of the specimens were already getting worn, while others were quite fresh. On the way down Erribia tyndarus was the only insect met with and that one got by disturbing it from its roosting places in the pine trees. The undersides were mostly dusky, only one had a uniformly light

surface beneath, and one example taken had only a single spot in the apex of the forewing. I took several specimens of an *Erebia* which at the time I did not identify. They are small and about the size of *E. melampus*, one appears to be a small form of manto from what remnants of markings there are and from the general shape of the wings, comparable to the form obtainable near Guarda, Lower Engadine, the others appear to be forms of *E. epiphron* var. nelamus with an approach to the obsoleta form of Tutt.

The absence of sun now became complete and one felt quite chilly when not moving. An abundance of Aglais urticae larvæ were seen on the edge of the marshy ground near the lake, in number quite too numerous for the available quantity of nettles. It is remarkable how often in the Alps one meets with the larvæ of the "tortoisehell" in similar difficulties as to its food. At the moment one recalls to mind a huge colony of the larvæ near the foot of the path familiar to all climbers of Mt. Blanc from Chamonix, where it was utterly impossible for all but the most ravenous few to attain the pupal stage, and another going up towards the little Ghedina lakes above Cortina in the Austrian Tyrol, where the larvæ were dying in numbers with only an odd chrysalis or two on objects around the devastated nettle-bed.

(To be continued.)

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#### EUROPTERA.

Pterodela livida, Enderlein, a Psocid new to the British Fauna. ( figs. 1-5).

By RICHARD S. BAGNALL, F.L.S., F.E.S.

Whilst I cannot pretend to have made a study of the Psocidae I have taken sufficient interest in the group to tempt me to gather together a certain amount of literature on the European species.

One day in July I had the opportunity of spending a couple of hours in Whittle Dene, near Ovingham-on-Tyne, accompanied by Prof. Hudson Beare. Our visit was planned in the hopes of securing imagines of an unknown thrips, of which I had discovered the very distinctive larvæ upon hazel a couple of months previously. There was no sign of this thrips, however, either larval or imaginal, though the readily recognised red and white banded larvæ of Haplothrips obscuripennis, Bagnall, turned up, being previously known from the Oxford district, where it is not really uncommon, and widely distributed.

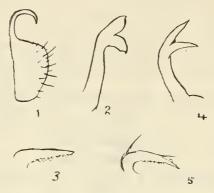
I bottled an interesting Hemipteron and several Psocids, especially minute forms, including a light yellow Pterodela, which I thought might be referable to Pterodela livida. The specimen was luckily a 3, and examination in a rough glycerine mount proved at once that it was undoubtedly referable to that species, described by Dr. Gunther Enderlein from Göhren, in Rügen Island, Prussia.

#### Pterodela Livida, Enderlein.

Zool. Jahrb., xviii. Abth. f. Syst., 1903, p. 374, pl. 3, 4, 6 and 9. This species, together with P. quercus, Kolbe, differs from the wellknown P. pedicularia, L., of which specimens are running about on the curtain and window-sill as I write, by the type of gonapophysis in the d, the latter having this organ roundly curved in the form of a crook, and simple at apex instead of bifurcate as in the former.

P. livida is a shade smaller (length of forewing 1.5mm.-1.6mm.) than P. pedicularia, and distinctly smaller than P. quercus, and differs from both in its light yellow coloration; the wings are hyaline with light yellow veins, and from P. quercus, apart from size, colour and general appearance, I'. livida is at once separable by the form of the gonapophyses and valva, as will be seen from the accompanying rough figures.

Habitat. Northumberland, Ovingham, 1 & from oak, July, 1915.



P. pedicularia & Gonapophysis.
 P. quercûs & Valva.
 P. quercûs & Gonapophysis.
 P. livida & Gonapophysis.
 Yalva.
 × 160 (rough sketches after Enderlein.)

#### SCIENTIFIC NOTES AND OBSERVATIONS.

The Pine Processionary Caterpillar.—Dr. Chapman's theory as to the reason why the larvae of this species spin their cocoons in a bunch seems plausible enough, but why should the larvæ of Aphomia sociella and of the Hyponomeuta group adopt a similar plan, although not protected by urticating hairs? The Aphomia is parasitic on bees and wasps, but sometimes at least wanders from the nest when ready to pupate, and the cocoons are clustered; see Ent. Mo. May., March, 1895, and August, 1896, for two detailed accounts of this species; also Ent. Rec., February, 1896, and October, 1896, for additional notes on the clustering habit. Hyponomenta, on the other hand, is not parasitic, and the larvæ spin their cocoons in company in their nest. Is it possible that the clustering habit deters mice in the former case and birds in the latter from attacking the cocoons? or at least serves a useful purpose in making the foe too disgusted at the trouble of getting at the outer pupe to persevere until it reached the inner ones? If so the inner and more numerous pupæ would always be preserved at the expense of the few outer ones which were devoured. It is noteworthy in this connection that the cocoons of Aphonia are stated to be exceedingly tough, and that the larve appear to possess a rudimentary processionary habit in spinning together away from the nest in which they fed.—C. Nicholson, Hale End, Chingford.

#### DOTES ON COLLECTING, Etc.

Notes from S. Essex.—Although my collecting during the past few years has practically ceased, I cannot of course pass over Lepidoptera which force themselves upon my notice. This noon I found a quite fresh male specimen of Eugonia autumnaria at rest low down on

a gate-post. It is in perfect condition and appears not to have flown. This is the second specimen which I have taken in my garden. The other was a female which flew to my large acetylene lamp, on August 22nd, 1911. Three times this year I have seen Pyrameis cardui. Two specimens, much wasted, in the early summer, and the third a few weeks since, in fresh condition. A lovely female Calamia latosa flew in to light in my study two nights ago.—C. R. N. Burrows, Mucking Vicarage. September 16th, 1915.

Colias edusa at Chichester.—This butterfly has occurred here very sparingly this season. Three were seen on August 17th, and one of them (a male) was captured on that date in a clover field at Halnaker, by my friend Mr. Humphry. *Pyrameis cardni* was flying at the same time, and in September.—Joseph Anderson, Chichester.

September 20th, 1915.

EASTBOURNE IN MID-SEPTEMBER.—During the meeting of the Entomological Club, on September 18th, a ramble under the cliffs and over the top of Beachy Head afforded those on collecting bent the opportunity of picking up a few odds and ends. Polyoumatus icarus, Agriades thetis and A. coridon were in some numbers flying in the sun, and on the undercliff were noted as early going to rest wherever the sun was too low to keep them lively by its rays. Plusia gamma, Aspilates ochrearia (citraria) and Nomophila noctuella (hybridalis) were continually being stirred up from the herbage. Of course Pieris rapar was about the gardens. The only Crambus noted was C. geniculeus. Belated Epinephele jurtina were in some numbers, while several species of ant were indulging in their marriage flights, wherever there were stretches of undercliff, which had been sheltered from the wind for most of the afternoon. Frass on the footpaths of the roads in the neighbourhood of Meads betrayed the presence of the larvæ of Pygaera bucephala, and Celastrina argiolus was flitting around the ivy in suitable spots, while Orgyia antiqua could be noticed darting hither and thither in the roadways. It was reported that Calias edusa had been seen on the front during the morning, while Mr. Adkin exhibited the capture of the day, a living specimen of Polygonia c-album, which had been taken in the garden shortly previous to the meeting.-H. J. T.

Notes on Lepidoptera in North Wales.—At Barmouth in Merioneth, in September, the reigning butterfly was Pieris brassicae, we saw it flying along the sea coast, on the hills above the town and also half-way up Cader Idris. P. napi was once seen, and once or twice we thought we saw P. rapae but P. brassicae was everywhere. Vanessa io, Pyrameis atalanta and Aglais urticae were common especially where there was a clump of Eupatorium cannabinum by the way-side. Pararge megaera accompanied us along the lanes, sunning itself on the rocks or hedge banks. Here and there Rumicia phlacas and Polyommatns icarus appeared as bright spots in the herbage. At Dovey Junction we saw a belated 2 Dryas paphia on September 9th. On the stone walls we saw several beautiful specimens of Polia chi, they were all of the whitish form. Larvæ of the following species were also observed: Pharetra (Acronicta) rumicis, Spilosoma menthastri, S. lubri-

cipeda, and Phalera bucephala.

On September 3rd, by the waterfall at Tyn-y-Groes, I found three mines of Nepticula septembrella on Hypericum pulchrum. In these small leaves the larva at first makes a slender gallery and afterwards

consumes the whole of the parenchyma. When the mine is completed the leaf assumes the shape of a small bladder, and in this the larvæ pupates without leaving the mine. One mine of Lithocolletis alniella was found on alder and the imago appeared a few days later. At Barmouth the mines of L. coryli and L. nicellii were found on hazel and those of Nepticula plagicolella on sloe and M. trimaculella on poplar also occurred. An Elachista of the obscurella group was taken on the summit of Cader Idris (2929 feet) on September 7th and an imago of Cerostoma xylostella was noted some height above Arthog. Perhaps the most interesting species observed was Nepticula tiliae, two mines of which were found in the leaves of a lime tree overhanging the stream in the Torrent Walk at Dolgelley, on September 11th. When tenanted the mines are inconspicuous. Quite by chance the first was noticed and the leaf obtained. The next morning when examining the mine a second mine was discovered in the same leaf. The mine is much contorted at first but becomes bolder towards its termination. In the Fairy Glen near Bettws-y-Coed (Carnarvonshire) several old mines of this species were seen on a lime similarly situated to that in the torrent walk but higher above the stream. would seem therefore that this species prefers a shady situation near water.—A. Sich, Corney House, Chiswick, W. September 25th, 1915.

Scymnus arcuatus.—From July 17th to September 5th I have taken over a hundred specimens of Scymnus arcuatus, including five larvæ and five pupæ on old ivy at Stoner Park, Henley-on-Thames. They feed on the larvæ of an Alenrodes. The male is easily distinguished by

its white head.—(Rev.) J. F. Perry.

One specimen of this interesting beetle was taken by Wollaston on August 10th, 1872 at Shenton Hall in Leicestershire, by sweeping old ivy. As he had previously taken it in abundance in Madeira, unfortunately some doubt was expressed about his capture. I have been to Shenton Hall (some time ago), and through the kindness of Lord Camoys and the Rev. J. F. Perry I have been able to take a series of Seymmus arcuatus at Stoner Park, and the old ivy is growing under similar conditions in both localities.—Horace Donisthorpe.

#### **EXECUTION NOTES AND SHORT NOTICES.**

The volume, British Ants, Their Life-History, and their Classification,

by our colleague Mr. H. Donisthorpe, was published last week.

On Saturday, September 10th, a meeting of the Entomological Club took place at Hodeslea, the residence of the late Prof. Huxley, with Mr. R. Adkin as host. There were present Mr. Adkin, in the chair, Messrs. Donisthorpe and G. T. Porritt, members, Mr. A. H. Jones, honorary member, R. South, hon. secretary, and Messrs. E. J. Bedford, W. L. Distant, A. E. Gibbs, E. P. Sharp, A. E. Tonge, and Hy. J. Turner. After lunch a long walk was taken over the downs of Beachy Head, where some of the guests made numerous captures. Tea was partaken of at the top of the downs, and a return to the house made in time for a meeting and discussion in the study where Huxley worked during the latter part of his life, and where his bookshelves still remain. Supper was served at seven o'clock, and after a day of delightful weather the meeting dispersed in time to give the guests from a distance a late return home.

During the summer months there has been a most interesting exhibition at the Zoological Society's Gardens, Regents Park, in connection with the campaign against the House-fly. The pamphlet published on the subject, entitled The House-fly Campaign, is by Prof. H. Maxwell Lefroy, M.A., and deals with the life-history of Musca domestica (the common house fly) as well as other allied species, flies as carriers of disease, with notes on specific diseases, methods of destruction applied to hospitals, barracks, houses, etc., concluding with a list of reference books on the subject. The exhibition was particularly strong on the practical side; traps of all kinds, ingenious devices for attacking the pests in their various stages, various methods of protecting foodstuffs, etc., should have afforded enquirers much suggestive and useful information. In this connection we might refer our readers to the horribly realistic exhibit in the Hall of the Natural History Museum, South Kensington. At one end of the case a plate of ham set for a meal with a glass of milk beside it, at the other end a filthy midden heap with clustered flies and maggots. Other flies are passing between the two while some are sipping the milk and tasting the ham, plate, etc. The Museum pamphlet, The House-fly as a Danger to Health, by E. E. Austen, tells us that, "Since this fly (Musca domestica) is incapable of biting, its action as a disease-carrier is contaminative . . . . The germs of disease are carried on the exterior of its legs, wings, head or body, or, as is more usually the case, in the insects crop or intestine, and may subsequently be deposited on food or other substance," and goes on to urge every possible precaution against contamination.

In the Ent. Mo. May. for August, Mr. D. Sharp describes a new species of Coleoptera, Helophorus championi, which he has recently separated from its close ally, H. strigifrons, in the collection of Mr. G. C. Champion. The species was taken at Guildford and elsewhere, but

is very rare.

The son of our colleague, Mr. H. Donisthorpe, is now convalescent

and will probably return shortly to his duties in France.

Colonel Kaznakov, the Russian entomologist, whom I reported as severely wounded some time ago, had recovered before the summer. He convalesced at Geok-Tapa, and had returned to his military duties

some time before I arrived there in July.—M. B.

In the Scottish Naturalist for August is a short but interesting account of a combined excursion to the Outer Hebrides, in 1914, by a party of zoologists to investigate the entomological fauna. The following extract concerning Nyssia zonaria may be interesting. "The larvæ were present in myriads on the sandhills near Barvas. They were often blown into hollows in such numbers as to hide the ground. They were in various stages of growth. The vegetation in these places was extremely mixed, and included conspicuously Petasites, wild carrot, and a species of rue. It is impossible to state what plants were especially attacked."

More or less recently we have received from the Smithsonian Institute, Washington, the following separata from the Proceedings of the United States National Museum. "On a Collection of Javanese Crane-flies (Tipulidae, Diptera) in the U.S. Nat. Museum," with nine plates of figures of details; "New Genera and Species of Gall-midges," with numerous figures of details; "Flies of the Genus Agromyza,

related to Agromyza virens," with a plate of details; "The Dipterous Genus Symphoromyia in North America," with figures; "A Revision of the N. American Ichneumon-flies of the Sub-family Opiinae," with plates; "Notes on some Sawfly Larvae belonging to the genus Dimorphopteryx;" "The North American Bees of the Genus Andrena," by H. L. Viereck and T. D. A. Cockerell, the latter of whom has become a great authority on Hymenoptera since we knew him years ago in the South London Society; "Notes on the Life-history and Ecology of the Dragonflies (Odonata) of Washington and Oregon," with more than 200 figures; "Notes on Neotropical Dragonflies, or Odonata," with seven plates. "Lepidoptera of the Yale-Dominican Expedition of 1913;" and descriptions of many new species of Lepidoptera, Odonata, Orthoptera, Hymenoptera (Aculeata, Parasitica and Tenthredinoidea) and Diptera.

The Transactions of the Cardiff Naturalists' Society for 1914, recently to hand, contains a further long instalment of the excellent account of the "Coleoptera of Glamorgan," by our colleague Mr. J. R. le B. Tomlin. It will be found that the locality records, brought quite up to date, and the biological notes are extremely useful, while the historical references are interesting to those even who only take passing notice of the smaller inhabitants of their homeland area. Hallett gives a series of entomological notes for the year, mainly comprised of additions to the county records in the Hymenoptera Aculeata. From the bird notes by E. Cambridge Phillips, we take the following extract:—"We have had this year (1914) a visitation of countless caterpillars of the White Butterfly, which have devastated all our green stuff, brussels sprouts, broccoli, etc., to an extent that must be seen to be believed, in many gardens not a vestige of green can be seen on the grim skeletons of the stalks. Various remedies were tried, amongst others lime, and also weak carbolic acid and water, but all to no purpose. Poultry would not touch them, and the only aid was rendered by the following kinds of Tits, riz., the Great Tit, Blue Tit, and Marsh Tit, which came in numbers to eat them. I daresay other Tits came, but these were the only ones I saw."

We regret to hear that the youngest son of Mr. C. G. Champion, our honorary Librarian at the Entomological Society of London, has been wounded at the front. A later report says that his injury is

not serious, and that he is progressing very favourably.

The second part of the Transactions of the Entomological Society of London was issued early in August, and contains the following contributions:—(1) "New Butterflies and a Moth from Biak," by J. J. Joicey, F.L.S., and A. Noakes, F.E.S., with eight coloured plates. Biak is an island off the north coast of New Guinea, which although visited by W. Doherty in 1892, was not again explored until 1914, when the Messrs. Pratt spent more than two months there. (2) "Notes on the Larva and Pupa of Caligo memnon," by Dr. Davis of Belize, British Honduras, with a plate of figures. (3) The Descriptions of a large number of new species of South American Micro-Lepidoptera, seventy-two of them being created from the examination of either one or two examples only, by E. Meyrick, F.Z.S., F.E.S. (4) A series of excellent biological notes made by Prof. Poulton's correspondents in various parts of Central Africa.

The South-Eastern Naturalist has just been issued, and in its account of the Congress of the South-Eastern Union of Scientific Societies quite belies the somewhat pessimistic views we expressed as to the probable success of a meeting at Brighton in a year of war. The volume contains no entomological matter and very little which can be said to justify its title of "Naturalist," yet the matter is most interesting both locally and generally, and does great credit to the Hon. Secretary of the Union, Dr. William Martin, to whose efforts, so ably seconded by the Hon. Assist. Secretary, H. Norman Gray, the success of the Congress is due. The Presidential Address and papers read occupy nearly a hundred pages, and the reports of the various sections, proceedings of the Congress, and general information, take more than

another hundred. There are seven plates.

The Transactions of the London Natural History Society for 1914 has just been issued. It consists of some 86 pages, some of which contain advertisements, and one plate. Much on the same lines, it is a continuation of the record which was formerly issued by the late City of London Entomological and Natural History Society. It contains an itinerary of the exhibits at the meetings; the Presidential Address by Mr. L. B. Prout, in which he deals lightly with many entomological questions of the year as well as the general progress of our study; some very valuable and practical "Notes on Breeding and Collecting the Sesia" = Aegeriidae, by Mr. L. W. Newman; an extremely scientific summary of what is known of "Gynandromorphism," by the present President, Dr. E. A. Cockayne, together with articles on Ornithology and Archaeology. One would like to have had Dr. Cockayne's article completed by a full bibliography and possibly by a plate or two. Mr. Mera, who was in the chair of the old City of London Society for some years, has contributed a series of interesting personal reminiscences of the parent society. We are glad to see from this record that entomology has not been swamped, as we feared it might be, as a result of the amalgamation.

The Entomological News for July contains three plates. The first illustrates an article on "Recent Work on Catocalae" from Missouri. The second gives detailed figures for the "Studies on Costa Rica Odonata; the Waterfall Dwellers; the Transformation, External Features and attached Diatoms of Thanmatoneura Larve"; and the third illustrates some dozen "New Species of Lepidoptera-heterocera," described by F. Haimbach of Philadelphia, mostly Pyrales. W. Wild describes and figures a new species of Coleophora, C. albiantennaella, the larvae of which were found feeding on dogwood at

Buffalo.

In the Eut. Mo. Mag. for July Mr. D. Sharp describes a new Homalota, II. exillima belonging to the sub-genus Meotica. It has been taken in sphagnum in the New Forest by several collectors. Mr. Jas. Edwards describes several new species of Homoptera from Britain:—Megophethalmus scabripeunis from Colesbourne and numerous other places; Idioceras albicans ab. fusco-coeruleus on white poplar at Norwich; Deltocephalus thenii, common on Norfolk coast marshes at Wells and Weybourne; Limotettix saturata, in a marsh at Horeton, Norfolk, Leith Hill and Gomshall; Zygina mali, on apple trees at Colesbourne; and Psylla subferruginea, common on any coniferous tree between October and April. Mr. A. E. J. Carter adds three species to the

List of British Diptera: Trichopticus mutatus, taken by the Rev. Jas. Waterston near Peebles; Lasiops eriophthalma, taken in Perthshire on a stone wall; and Eccoptomera pullescens from Midlothian.

The Irish Naturalist for July contains an annotated "List of the Ichneumonidea from the North of Ireland," by the Rev. W. F. Johnson

with the aid of Mr. Claude Morley.

#### SOCIETIES.

Entomological Society of London.

May 5th, 1915.—LIVING PUPE OF PYRAMEIS ATALANTA.—Following on his exhibit and notes of March 3rd last, Mr. Newman again exhibited these pupe, and said he thought he might now fairly claim to have proved that this species can pass the winter in England in this condition. The Amathushid Genus Hyades, Boisd .- Mr. Talbot exhibited specimens of the genera Hyades and Taenaris, and read NEW LEPIDOPTERA FROM THE ARFAK MOUNTAINS, DUTCH NEW Guinea.—Mr. Talbot also exhibited on behalf of Mr. J. J. Joicey some new Lepidoptera from the Arfak Mountains, Dutch New Guinea, including a local race of Ornithoptera paradisea, Stgr. The Italian Mode of exclusion of the House-fly.—The Rev. F. D. Morice drew attention to a paper in the Trans. Ent. Soc., vol. i (1836), by W. Spence on this subject. Further Notes on the habits of the African ant, Megaponera fortens, F.—Prof. Poulton read a further account sent to him March 27th, 1915, by Mr. C. O. Farquharson. Interesting BUTTERFLIES FROM THE EAST COAST OF MADAGASCAR.—Prof. Poulton exhibited specimens from a collection kindly sent to the Hope Depart. ment by Archdeacon G. K. Kestell-Cornish, from Ambinanindrano, Mahanoro (about 400 ft.). A Uganda bug devouring a Lycenid BUTTERFLY. -- Prof. Poulton exhibited a pair of Mononyx grandicollis, Germ. (Cryptocerata), captured in cop. on a bird-dropping on wet sand, Nsadzi I., W. of Kome I., N.W. Victoria Nyanza, March 30th, 1914, by Dr. G. D. H. Carpenter. One of the two bugs was devouring a male Lycaenesthes larydas, Cr., also exhibited to the meeting. OBSERVATIONS ON BUTTERFLIES AND THE ATTACKS MADE ON THEM BY BIRDS, ABOUT 30 MILES W. OF THE VICTORIA NYANZA AND ABOUT 1° S. LAT .-Prof. Poulton read a letter on this subject from Dr. G. D. H. Carpenter. Papers.—The following papers were read:—"New Lepidoptera from New Guinea," by J. J. Joicey, F.L.S., F.E.S., A. Noakes, F.E.S., and G. Talbot, F.E.S. "Descriptions of South American Micro-Lepidoptera," by E. Meyrick, B.A., F.R.S., F.E.S. "Life-History of Caligo memnon," by F. L. Davis, M.D., F.E.S. "Some Palmarctic Species of Cordulegaster," by Kenneth J. Morton, F.E.S. "Experiments on some Carnivorous Insects," by C. F. M. Swynnerton, F.E.S.

June 2nd, 1915.—Election.—Dr. A. B. Northcote, Blenheim House, Monkgate, York, was elected a Fellow of the Society. Larvæ of Agriades escheri.—Dr. Chapman exhibited some full-fed larvæ of Agriades escheri bred from the egg. Variation in Ornithoptera alexandrae selected from a series to show the extreme variations in the wing-markings; also a female example of Morphotenaris keuricki; all from New Guinea. Method of Breeding Psocidæ, etc.—Mr. C. B.

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Williams exhibited a method of breeding Psocidae and other small insects which feed on fungi, etc. BEE AND PLANT FERTILISATION.—The Rev. F. D. Morice exhibited a ? of the solitary bee Andrena labialis taken near Woking on May 19th, 1915, having attached to the disc of its clypens a vegetable substance apparently a pollinium of some orchid. Noteworthy Ants. -Mr. Donisthorpe exhibited specimens of Anochetus cameroni, Forel, a new species taken by Dr. Cameron at San Roque, December 1914, and Cremastogaster inflata, F. Smith, taken by Mr. Bryant at Sarawak, December 1913. The latter species has the thorax distended, which acts as a reservoir for honey, in the same way as the distended gasters of the true "Honey Ants." FURTHER OBSER-VATIONS ON AFRICAN INSECTS BY DR. G. D. H. CARPENTER.—Prof. Poulton said that he had received another consignent of insects and further letters from Dr. Carpenter, who had added further information to the notes read to the Society on May 5th last. A FAMILY OF ACRAEA Journston. - Dr. Eltringham exhibited a family of five examples of Acraea johnstoni, Godm.. bred by the Rev. K. St. A. Rogers at Sagalla, B.E.A., together with the female parent. The latter and four of the offspring were of the form confusa, Rogenh. Living Elater sanguino-LENTUS. Comm. Walker exhibited living specimens of E. sanguinolentus, beaten from Pinus sylvestris at Brockenhurst on the morning of the meeting. Paper.—The following paper was read:—"What the larva of Lycaena arion does during its last instar," by T. A. Chapman, M.D., F.Z.S., F.E.S.

#### REVIEWS AND NOTICES OF BOOKS.

British Ants. Their Life History and Classification.—By H. St. J. K. Donisthorpe, F.Z.S., &c.—Wm. Brendon and Sons, Ltd.,

Plymonth. Published by subscription.

Four things, said the ancient Semitic sage, are little upon the Earth, yet are exceeding wise; and the first of these are the Ants, "a people not strong, yet who prepare their meat in the summer." And from the far-off days when those words were written, up to the present time, the social Hymenoptera, more especially the Formicidae, have excited the admiration and stimulated the curiosity of mankind, because they, more than any other creatures, have displayed the working of instincts, which have seemed comparable with the intelligence of Man himself. And so it has come to pass, that although other orders of the Insecta appeal perhaps more in variety of form and beauty of coloration to the student of Nature, yet none have secured the interest of the Biologist to the same extent, or in the same manner, as the Hymenoptera; and it is for this reason that we welcome the appearance of the first book in the English language, devoted, with any approach to scientific accuracy, entirely to our British Ants.

The entomological public need no introduction to the author of the volume before us—least of all the readers of *The Entomologist's Record*. Mr. Donisthorpe has long been known by his writings, published here and elsewhere, as our chief British authority on the *Formicidae*: and by his careful and patient study, extending now over many years, of various species of ants kept in captivity, to be singularly well fitted to interpret their activities to that increasing number of the public, for

whom such things have an interest.

Mr. Donisthorpe's treatment of his subject is particularly exhaustive and the book is, in each of its parts, furnished either with woodcuts or reproduced photographs, which completely illustrate the subject of the text.

The first portion is devoted to an explanation of the anatomy of the group, both external and internal. The second treats of the economic and physiological ant characteristics, including a specially interesting description of the curious polymorphism which obtains within the species, and which must of course be studied with reference to the singular arrangement implicit in the socialism of the Hymenoptera, and in them alone among the Arthropoda, whereby the function of the female has been so divided that it becomes finally expressed in two forms, morphologically as well as functionally distinct, with the result that each species appears to exist in three sexes, or at least separate forms. The third part of the book tells of all that is known of the Psychology, or as some Biologists might prefer to express it, the Physiology of Ants.

Notes on collecting, and the treatment of Ants kept in captivity for observation follow, and the remainder of the volume is devoted to separate descriptions of every species of Ant which inhabits our Islands.

These descriptions, prefaced of course by appropriate dichotomic tables, which should enable the most inexperienced student to name his captures without difficulty, are exhaustively complete; they are accompanied, wherever possible, by the original description of the species, quoted literatim, and by lists of all allusions to it in Entomological literature. Particulars of the distribution of the species in this country follow, with the observers name given for each record. Every description is illustrated by photographic reproductions from specimens in the author's collection, of male, female, and worker, and to say that these photographs are by A. W. Dennis is to guarantee their excellence. More fascinating perhaps to the general reader, will be the descriptions of the life-histories and activities of these several species, the curious coadaptations and relativities which exist between species and species, how they act as guests, on differing terms, to so many other totally unrelated species of the Arthropoda, or fight pitched battles among themselves.

Particularly, will the interest of the reader, who perhaps may care nothing about the discrimination of species, be excited, by such a story as that describing the slave raids of Formica sanguinea (p. 284 et seq.); how this ant goes forth by companies to capture and remove to its own nest, there to be retained as slaves, the pupe of another species of ant, Formica fusca, or reading (p. 248) that the workers of Formica rula continue to toil without cessation from sunrise to an hour after sunset, all through a summer's day—be reminded of that familiar invitation to the "slacker" of all times to "consider her ways and be wise."

But taking this book as a whole, it seems possible that the chapter headed "Psychology," as it will attract the deepest interest by others than professed entomologists, may also invite their only criticism. The subject is, in fact, how far the activities of the Formicidae (as of course other Hymenoptera) are induced by factors comparable with human intelligence. Mr. Donisthorpe does not commit himself to

any decided views on this question, but from the opinions cited and the instances adduced, it might possibly be felt that the interpretation of these activities is perhaps too much in terms of human consciousness. The fact that man possesses five separate avenues whereby the external world may excite such appropriate nervous action as can be transmuted by the brain into distinct consciousness, does not m any way preclude the assumption, that the Insecta, which are doubtless the last evolutionary phase of the Arthropoda, may possess quite other, or more numerous methods, by which external influences, necessarily unknown to our experience, may stimulate their nervous system. Thus Henri Bergson, the philosopher who has supplied the modern world with a new conception of Life, as is well known, considers Instinct and Intelligence to be quite distinct vital phenomena. and not that the former is merely an incomplete or undeveloped form of the latter. As he says:—"These creatures (Hymenoptera) represent the culminating point of a progressive evolution of instinct. Their marvellous actions can only be explained by supposing that instinct is a quite different and, in a certain manner, opposite mode of mental activity to that by which we apprehend reality." But it is obvious that anything like an adequate consideration of such a subject as this is quite out of place in a brief review of a book on ants, and we only allude to it to show into what wide fields of speculation, and even philosophy, a single chapter in this most excellent work might lead ns. As a whole the work brings our knowledge of the British Ants up to a point which leaves nothing to be added, and we can only wish for it that publicity which Mr. Donisthorpe's treatment of his subject deserves.

#### BITUARY.

#### Colonel Neville Manders, D.D.M.S., F.Z.S., F.E.S.

It is with no conventional expression of regret that we record the death of Colonel Neville Manders, who, as we shortly announced in our last issue, was killed in the Pardanelles in August. He was well known to entomologists who attend the meetings of the Entomological Society of London, and his genial manner and attractive personality must make his death to many others, as it is to the writer of this notice, the loss of a real friend.

He was both by birth and education a Marlburian, having been born at Marlborough in 1859, the youngest son of Major T. Manders, and educated at the College. He joined the Army Medical Service in 1884, and saw active service in Egypt the following year, and again in Burmah two years later. He was afterwards stationed in the Shan States, at Rawal Pindi, at Colombo, and in the Mauritius, as well as holding appointments at home, at Aldershot and at the Curragh Camp in Ireland amongst other places, and had also made holiday excursions in such widely different localities as Switzerland and Java, and was finally appointed, at the end of 1918, to the Deputy-Directorship of the Medical Service in Egypt, a position which he held till the beginof the present year, when he was appointed to the Headquarters Staff of the Australian and New Zealand forces, with whom he proceeded to the Dardanelles.

His interest in Entomology began in early boyhood, and only

ended with his life. A proof of the former statement may be found in the August number of the Entomologist, in a note in which his entomological reminiscences date back to his tenth year, whilst a proof of the latter is to be found in our own July-August issue (p. 149) in a note actually written from the trenches where he was so soon to meet his death. He joined the Entomological Society of London so far back as 1887, and in 1890 we find in their Transactions a paper from his pen on the Butterflies of the Shan States, which contains also most valuable notes on the country and climate. Four other papers of his are published in the Transactions, one on certain breeding experiments in Cevlon, another on the Butterflies of the Mauritius, and two on subjects connected with Mimicry, in which he always showed, as the readers of this magazine are well aware, a special interest. He was often regarded, quite mistakenly, as an opponent of the theory; in reality he was a careful student, unwilling to assent definitely to any theory without sufficient proof—a thoroughly sound (indeed, the only thoroughly sound) and scientific position; he was however driven into an attitude towards the question, described by the present writer in this magazine as one of "armed neutrality," by the efforts made by some of the supporters of the theory to make it account for many things which could much more readily be accounted for in other wavs-indeed, it seems to be the peculiarity of most specialists to imagine that their favourite theory accounts for everything. Many of his notes and short articles in this magazine are connected with this subject. He first wrote for us in 1904, and since then it is rarely indeed that his name did not figure in the "list of the contributors," and all that he said was worth saying. As a controversialist he was an ideal opponent, for he always kept his temper; and this was no doubt partly because he had no axe of his own to grind, his aim was to get at the truth, not to support a theory. His last paper on the subject of Mimicry was published in August last in the Proceedings of the Entomological Society, and valuable as it was, it called forth the yet more valuable reply of Mr. Swynnerton, who produced the very proofs for which Colonel Manders had always been asking.

Colonel Manders leaves a widow and daughter, to whom we offer our deepest and most respectful sympathy.—G.W.

#### Nomenclature.

[Addendum to "Kirby, William. Monographia Apum Angliae." Page 132.]



Fig. 33. a.o. Forceps. b. Phallus.

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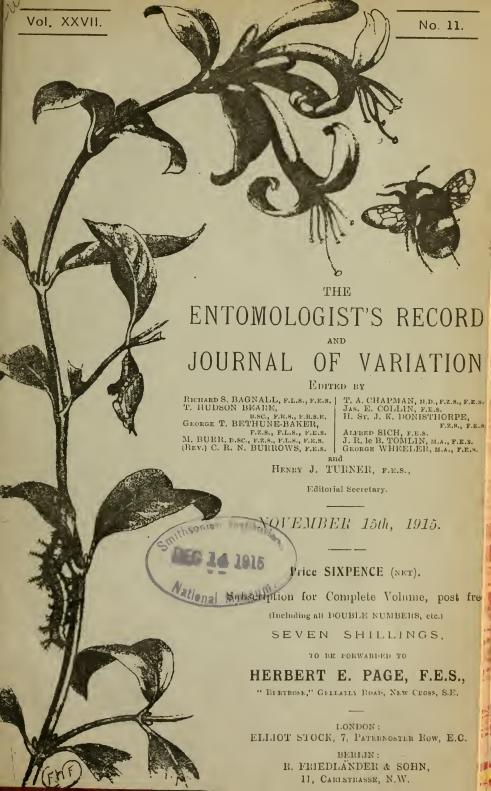
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# A brief review of the British Coniopterygidae (Neuroptera), with tables of the European Genera and Species. (Figs. 1-12.)

By RICHARD S. BAGNALL, F.L.S., F.E.S.

When the late Mr. Lachlan published his Monograph of the British Neuroptera-Planipennia (Trans. Ent. Soc., 1868, pp. 145-224, pl. viii.-xi.) he remarked, "These insects are as yet ill-understood, and I regret that the subject can receive no elucidation from me."

He diagnosed the three species, as follows:-

Conioptery. psociformis, Curtis. "Antennæ with about forty joints, much longer than the body. Wings very unequal, the posterior pair being very small. Expanse of wings  $3\frac{2}{3}-4\frac{1}{9}$  lines."

Conioptery.c tineiformis, Curtis. "Antennæ about the length of the body, with about twenty-five joints. Wings sub-equal, slightly smoky-gray. Abdomen rather short, ochreous.

Expanse of wings,  $2\frac{1}{2} \cdot 2\frac{3}{4}$  lines."

Coniopteryx aleurodiformis, Stephens. "Antennæ with more than thirty joints, longer than the body. Wings sub-equal, broad, the neuration tolerably distinct. Abdomen thin. Expanse

of wings,  $3\frac{1}{2} \cdot 3\frac{2}{3}$  lines.

These descriptions—brief as they are—admirably fit the three species we have known as British for so long, and, until this year, no addition has been made to the list. Abroad, however, O. M. Reuter, Loew, Klapalek, Wallengren and Enderlein, had made new discoveries, and in 1906 the last-named author, Dr. Günther Enderlein, published a monograph of the world's species, with tables and figures (Monographic der Coniopterygiden in "Zool. Jahrb.," xxiii., Abt. f. Syst., pp. 173-242, plts. 4-9). Herein he describes ten European species, any one of which might possibly occur in the British Isles. A few of these are separated on what some might regard as slight characteristics so far as neuration is concerned—vide Coniopteryx tineiformis and C. pygmaeus—but an examination of the 3 genitalia more than strongly confirms specific rank.

In June of this year I described Conventzia cryptoneuris, found on sallow in the North of England (Ent. Mo. Mag. and The Vasculum), and two months later Mr. J. W. H. Harrison brought forward the larch species, C. pineticola, Enderlein, from North Yorkshire and South Durham as British (The Vasculum). The former may prove to be a form of pineticola, and it is desirable that the genitalia of both C. cryptoneuris and also C. pineticola var. tetensi be examined before

finally settling their respective status.

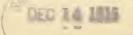
The interest that these discoveries aroused caused me to suggest to Professor Poulton that the species in the Daleian collection should be examined, and thanks to his kindness I have had the opportunity of

doing this so far as their dried condition would permit.

Of the bulk of the material in this collection falling into the genus Coniopteryse, s.s., and standing under the names C. aleurodiformis, Steph. (error in identification), C. hyalinns, C. parrulus, Vill. (= C. tineiformis), and C. obsenus, I have been unable to make any satisfactory report—though the study of an abundance of fresh material might lead to interesting results.

Coniopteryx tineiformis, C. pygmaeus, Semidalis alengodiformis, S.

NOVEMBER 15TH, 1915.



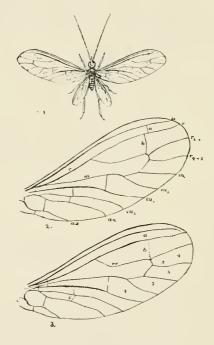
curtisiana, and Conwentzia psociformis are all represented in this collection, and C. pygmaeus and S. curtisiana are now brought forward as British for the first time.

I have said sufficient to show that this is a little group that might well repay the serious study of British entomologists, and, as a guide and help to any who may turn their energies in this direction, I have added tables of the European genera and species—to some extent modifications of Enderlein's tables—and rough sketches—also largely drawn from Enderlein's monograph.

I may add that the names hyalinus and obscurus, quoted from the

Dale collection, appear to be label or MS. names.

Block of figures 1-3 has been kindly loaned by the Editors of *The Vasculum*.



Figs. 1-3. 1. Conwentzia psociformis, After Curtis.

2. C. pineticola, forewing.

3. C. cryptoneuris, forewing.

an. Analis; ax. Axillaris; 1, 2, 3, Cells with light patches in C. cryptoneuris.

### Family—CONIOPTERYGIDÆ.

Enderlein divides the family into two well-marked sub-families on the strength of differences in the wing neuration as well as strong morphological features.

External lobe of maxilla 1-jointed; abdomen without ventral "sacs."... ... Conjopterygin.e.

External lobe of maxilla 3-jointed; 5-6 pairs of small ventral "sacs," on abdominal segments 1-6 ... ALEUROPTERYGINE. ... ...

### Sub-family—CONIOPTERYGINÆ.

### Tribe—Conwentzhni, Enderlein.

Easily recognised by the very small hindwings with strongly reduced venation (fig. 1). Contains only the one genus.

### Conwentzia, Enderlein.

1. Colour lighter, antennæ 38-43 jointed; nervules of forewing between sub-costa and radius and radius and radial-ramus apart, the latter striking the upper arm  $(r_{2+3})$  of fork ... C. psociformis, Curtis.

Colour darker, antennæ 28-34 jointed ... 2.

2. Nervules above-named touching, running in one line and striking at the fork-point or the upper arm just above it (fig. 2). Light or semitransparent, elongated patches in distal cells marked 1, 2 and 3 (fig. 3). Found on sallow. C. cryptonenris, Bagnall.

3. Nervules apart, the latter striking the stem of the fork (fig. 2). Forewings apparently without transparent patches in the distal cells. Found ... C. pineticola, Enderlein. on larch. ... ... . . .

### Tribe—Conforterygini, Enderlein.

Hindwings normal.

### TABLE OF GENERA.

1. Media in hindwing forked (figs. 7-8).... Media in hindwing not forked, simple (fig. 6).

CONIOPTERYX, S.S.

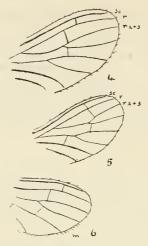
2. Nervule connecting the fore-cubitus  $(cu_1)$  and the media (m) in fore- and hindwings striking the latter on the lower arm  $(m_g)$  of fork (figs. 7

and 8) ... ... ... Semidalis, Enderlein.
3. Above-named nervule in both wings striking the media on the stem of fork below the fork-point (fig. 9). Species dark ... Parasemidalis, Enderlein.

### Genus—Conforteryx, Curtis.

1. Size smaller (scarcely more than 5mm, across the wing), antennæ shorter and less than one-half the length of forewing, stouter; nervules between the sub-costa and radius and radius and radialramus touching or almost touching in both foreand hindwings (fig. 5); marginal setæ of wings more minute and sparse ... C. pygmaeus, Enderlein.

2. Size larger (6mm. to 7.0mm. across wings); antennæ longer and more slender, 25 to 26 (rarely more) jointed. Above-namel nervules well apart in both fore- and hindwings (figs. 4 and 6), and sette on margins, especially the hind margin, less sparse (fig. 6) ... C. tineiformis, Curtis.

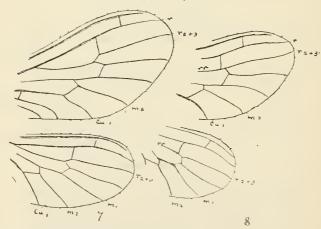


Figs. 4-6. 4. Coniopteryx tineiformis, end of forewing.

- 5. Coniopteryx pygmaeus,
- 6. Coniopteryx tineiformis, ,, ,,

sc. Sub-costa; r. Radius; r₂₊₃. Upper arm of fork of radial-ramus; m, media—simple in the hindwing in this genus.

Genus-Semidalis, Enderlein.



Figs. 7, 8. Fore- and hindwings of

- 7. Semidalis aleurodiformis.
- 8. Semidalis curtisiana.

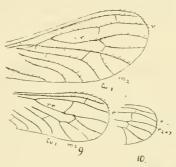
rr. Radial-ramus, stem;  $m_4$  and  $m_2$ . Upper and lower arms of media which is forked in the hindwing in this genus; cu,. Upper arm of cubitus.

 Nervule connecting radius and radial-ramus in both fore- and hindwings striking the latter in upper arm of fork (r₂₊₃, fig. 7) ... S. aleurodiforms, Steph.

2. Above-named nervule in both fore- and hindwings striking the stem of fork below the fork-point (rr fig. 8) ... ... S. curtisiana, Enderlein.

### Genus-Parasemidalis, Enderlein.

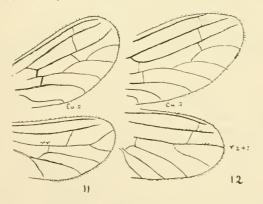
The following species are known on the Continent, but have not been discovered in the British Isles.



Figs. 9, 10. 9. Fore- and hindwings of Parasemidalis annue.
10. End of hindwing of P. fuscipennis.

1. Nervule connecting the radius and radial-ramus in both fore- and hindwings striking latter on the stem below the fork-point (rr, fig. 9).... P. annae, Enderlein.

2. Above-named nervule in the hindwing striking the radial-ramus on the upper arm of the fork  $(r_{2+3}, \text{fig. } 10)$  ... ... P. fuscipennis, Reuter.



Figs. 11, 12. Fore- and hindwings of 11. Aleuropteryx loewi. 12. Helicoconis lutea.

cu., Lower arm of cubitus.

### Sub-family—ALEUROPTERYGINÆ.

Two European species are known, namely, *Helicoconis lutea*, Wall., and *Aleuroptery. loewi*, Klap., but neither have yet occurred in the British Isles.

1. Lower arm of cubitus ( $cu_2$ ) in forewing normal (fig. 12); nervule connecting radius and radial-ramus in hindwing striking the latter on the upper arm of the fork ( $r_{2+3}$ , fig. 12) ... ...

Helicoconis, Enderlein.

2. Lower arm of cubitus ( $cu_2$ ) in forewing strongly bent towards end (fig. 11); nervule connecting radius and radial-ramus in hindwing striking the stem (rr) of the latter well below the fork-point (fig. 11) ... ... Aleuropteryx, Löw.

#### NOTES ON BRITISH SPECIES.

1. Conventzia psociformis, Curtis.

1834, Brit. Ent., plt. 528: 1836, Steph., Ill., x., 117.

Common throughout the summer (McLachlan).

Evidently widely distributed. The following are some recent northern records:—Quite common in the Cleveland district (Yorks.), especially on holly (J. W. H. Harrison); Gibside, Co. Durham, and Ovingham-on-Tyne, Northumberland (R.S.B.). Twenty-four examples are in the Daleian collection.

### 2. Conwentzia pineticola, Enderlein.

1905, Ber. Westpr. bot.-zool. Ver., pp. 26-27, figs. 10 and 11.

Mr. Harrison brings this interesting insect forward in *The Vasculum*, i., p. 56, 1915; recording it as very common and widely distributed in the Cleveland area (Yorks.) on larch, and also records a pair from county Durham. The insect is very variable, and it is possible that the following, found on sallow, may prove to be a form of it, though it differs in many points from Enderlein's description. The light patches in the distal cells of forewing may have been overlooked in *pineticola*—they are not present in examples of *pineticola* I have examined, but I have noticed variation in this direction in *C. psociformis*.

3. Conwentzia cryptoneuris, Bagnall.

1915, Ent. Mo. Mag., li., 192-3, June, and The Vasculum, i., pp. 22-24, figs. 1-3, June.

Northumberland, Newcastle-upon-Tyne. Three examples found on sallow, July, 1914. See above remarks.

4. Coniopteryx pygmaeus, Enderlein.

1906, Zool. Jahrb., xxiii., Abt. f. Syst., p. 201, figs. 6, 36, 55, 58, and 61.

This species will probably be found in British collections mixed with *tineiformis*. When fresh examples can be examined strong differences will be found in the form of the last abdominal segment, and in the structure of the genitalia in the  $\mathcal{J}$ .

There is at least one example of this species (labelled Conioptery.r hyalinus, Steph.) in the Daleian collection.

### 5. Coniopteryx tineiformis, Curtis.

1834, Brit. Ent., plt. 528; 1836, Steph., Ill., x., 116.

Not uncommon in summer, especially in fir trees (McLachlan).

Probably a widely distributed insect. Quite common on oak and sallow in the Cleveland district (J. W. H. Harrison); on oak, Gibside, county Durham (R.S.B.).

A large number of the examples in the Daleian collection fall into Coniopterys, spp., but I am not able to deal with the bulk of them.

### 6. Semidalis aleurodiformis, Steph.

1836, Steph., Ill., x., 116.

Probably equally common with the last (C. tineiformis), but I

cannot say that I have personally noticed it (McLachlan).

Apparently rare. The following are recent northern records:—Cleveland district, Yorkshire, one example from honeysuckle (J. W. H. Harrison); Felton, Northumberland, one from oak, 1915. (R.S.B.)

The only two examples in the Daleian collection that I can identify as this species with any degree of certainty are labelled (and have been wrongly identified as) C. parrulus, Vill., =tineiformis. Other examples standing under that name are true Coniopteryx, spp.

### 7. Semidalis curtisiana, Enderlein.

1906, Zool. Jahrb., xxiii., Abt. f. Syst., p. 212, figs. 13, 62.

Recognised chiefly by the position of cross-veins (nervules) in both fore- and hindwings, and the relative lengths of the joints of the hind tarsus.

There are two undoubted examples in the Daleian collection labelled "Conioptery.c aleurodiformis, Steph.," 124/67 and 125/67.

### "A Poser," Stainton.

By Hy. J. TURNER, F.E.S.

(Continued from page 199).

I have now made an examination of the series of trux-lunigera in the British Museum. There is first a set of the lunigera, British, from the Leech collection. They are all of the well-known form only varying within the usual limits, orbicular and claviform staring in both males and females, reniform well marked, the usual soft grey surface in the males and the delicate surface of the darker females, hindwings strongly pearly in the males, etc. Next follows a series of thirty-six specimen of what is called trux. It is a series made up from various sources and is presumably a very good exponent of what many well-known authorities and collectors have recognised as trux within the last fifty years. There are six from the Zeller collection, six from the Frey collection, and fourteen from the Leech collection including two of Staudinger's and one of Gerhard's.

The first impression, which becomes still more dominant on closer examination, is that the series called *trux* is a very distinct species from the *lunigera* of Britain. It is a bigger, bolder species and practically every character contrasts strongly with the delicate general

characters of *lunigera*. No one could have any hesitation in separating the two if a mixed assortment were put before them.

The following notes are made on the individual specimens:—

1 & 2. Are labelled ab. olivina. They are from the Leech coll. locality France. Both have the claviform well marked and deep black, but in olive tone are not comparable with the figures in the two copies of Hübner's Samm. eur. Schm., with which I compared them. Possibly Hübner's figures may have faded but this would be very unlikely.

3. Islabelled ab. terranea, locality France, from the Leech collection. I can see no difference between this specimen and many others in the

series.

- Leech collection, from France.
   Zeller collection, no locality.
- 6, 7, 8. Leech collection, from Central France.

9. Zeller collection, no locality.

10, 11. German in origin.

12, 13, 14. Leech collection, locality France. One specimen has the claviform, well developed deep black, another has a part of the orbicular strongly white, the rest of the stigmata are inconspicuously traceable.

15. Zeller collection, no locality.

16. Labelled Europe. These two are possibly not trux at all, but a distinct species, from their size, shape, markings, etc.

17. Leech collection, from Standinger collection.

18, 19. Frey and Zeller collection respectively, no localities.

20. Leech collection, no locality.

21, 23. Frey collection, no locality.

22. Not labelled.

24. Zeller collection, no locality.

25. Leech collection, from Gerhard collection, no locality.

26, 27, 30. Frey collection, no locality.

28, 29. From Switzerland, "Wallis," i.e., Valais.

31. Leech collection, from Standinger, locality Switzerland.

32. Zeller collection, no locality.

33, 34. From the island of Capri, Italy.

35, 36. From Teneriffe, one specimen has the strongly emphasised claviform.

It may be assumed that probably the Frey specimens are Swiss in origin and that Zeller's are German.

As a whole the 36 specimens are very uniform in size, except the two noted above, numbers 15 and 16, which are much smaller, have differently shaped wings and do not conform in marking and tone with the rest of the series. There is no single insect which one would pick out from these 36 specimens and place, even with the slightest doubt, among a series of British lunigera.

Taking the characters of the markings in detail, it is noted that-

(1) The stigmata are generally indefinitely developed in all the specimens. Rarely is there one of the three stigmata conspicuous, and not in a single specimen do we find all three developed as is invariably the case with *lunigera*. In many cases the reniform is quite obsolescent and even untraceable.

Only six specimens have the claviform well developed and in these the rest of the characters are in no way comparable with those of lunigera. Only two examples have the orbicular staring, but in these it is misshapen, the upper part being clouded over and indistinct in outline.

(2) Not a single specimen has a tone in any way approaching that of lunigera, so much so that anyone familiar with either species and unfamiliar with the other, when meeting with it for the first time would never confuse the two. One or two specimens are somewhat lighter at the base on the inner margin.

(?) A considerable proportion have a ruddy or ferruginous tinge which is never seen in the large number of lunigera which I have examined. Those that are grey are of an other colour rather than a

soft grey as in lunigera.

(4) In shape of wing all but two are uniformly bold, much larger than *luniyera* both in length and width, the costa and inner margin are not so nearly parallel, there is difference in the apex of the wing.

(5) The specimens of French origin are noticeable as having the

hindwings more pearly in appearance than have the rest.

As suggested above, one would say that in the Museum series of true there are at least two species mixed, and it may be that most of the French examples will also be separated as distinct.

I failed to find any lunigera in the Agnotidae taken from Stephens' collection, but there is a very fine, long series in the Banks' collection,

all of which have the salient characters of the species.

In the Bethnal Green Branch of the South Kensington Museum are deposited the collections of Henry Doubleday. These consist of extensive series of our British Lepidoptera and more or less short series of the Macro-lepidoptera of the continent of Europe. In the former is a long series of British lunigera in very good condition and quite in accord with every other series I have seen, not one specimen of aberrance outside the usual narrow limit of the species, in marking or in size. In the continental series are the following three sets:—

1. Five specimens under trux, with no localities, nor any sign of

origin. They are large and bold insects.

(1) A 3, with no dark suffusion inside hind margin of hindwing.

(2) A 3, in which the reniform is much obscured in shape by an extensive and irregular clouding all around it, and having the hindwing with clouded suffusion in the submarginal area, but not

emphasised quite so much as in the case of the 2 s.

(3) A 3, the nearest approach to lunigera, in emphasis of the three stigmata, that I have met with. However, the delicacy of surface found in lunigera is quite wanting in this specimen, and above all, the suffusion in the hindwing, leaves a considerable, quite light area inside the hind-margin, which is suggested in no specimen of either true or lunigera that I have examined. The size and shape, as well as the collective impression suggested by the markings, preclude one from confusing the specimen with lunigera. If not an aberrant form of true it may possibly be distinct.

(4) A 2, with a suspicion of olive in its tint, possibly faded; it has

the reniform fairly obvious, rest of marking almost obsolete.

(5) A ?, with the markings all suppressed, the uniform grey being hard and ochrous.

^{*} Since writing this, these collections have been removed to S. Kensington.

The dark suffusion in the marginal area of the females is but a little more intense than in the two males which have a similarly placed darkening. This set agrees on the whole with the British Museum series of true.

2. This set consists of two specimens from South France, labelled as var. terranea. One of them in texture and colour suggests that of a somewhat faded Noctua oleracea; it has a smoother surface than the other. These examples are smaller than average true, still they are larger than British lunigera, to which they have not the slightest resemblance.

3. This is a set of three insects from the South of France labelled lunigera. It is significant that Doubleday did not place this set next to the series of trux but in quite a different group of the Agrotids. ["The species stand in the order in which Doubleday left them."—See Official Catalogue.] He evidently did not consider the two

species comparable.

These three insects certainly resemble lunigera in character of marking and even approach that species in colour and texture, but are larger and much more robust, and without the delicate surface so strong a character in the latter. All three are females but not so dark as the average females of British lunigera. The stigmata of the first and third are well developed and emphasised; in the second specimen the stigmata are scarcely developed and it is so aberrant that one feels inclined to say that the specimen is hardly co-specific with the other two. The third specimen is quite one-third as large again as average lunigera. If these are continental representatives of our species lunigera, they belong to a very remarkable geographical race. They are certainly separable from trux to which they have little or no resemblance.

Thus our investigation of what has been done in the past fifty-six years with the "Poser" which Stainton put out in 1859, shows that his suggestion of placing trux and luniyera "side by side" in the same cabinet has been faithfully carried out. (See the British Museum series which has recently been re-arranged with this suggestion incorporated). But yet we have not reached the consideration of the inference one should draw from Stainton's suggestion, riz., to satisfactorily settle the question as to the specific distinction of trux and luniyera. Thus far have we progressed in more than fifty-six years.

From the above facts and observations there are very few entomologists but will be perfectly satisfied to consider British Agrotis lumigera as a good species, and as quite distinct from the continental species known as Agrotis trux. There is, however, one other line of investigation which has not been used, and that is the comparison of the genitalia of the two species. The genitalia of A. lunigera have been figured and shortly described by Pierce, but I do not know if those of A. trux have been done. Later on, no doubt, when we can get specimens of the latter species from the continent, the comparisons can be made, and this final test applied to confirm the decision, which is so strongly foreshadowed in this article.

## In the Caucasus again.

By MALCOLM BURR, D.Sc., F.E.S.

[cf. Ent. Rec., xxiv., p. 297; xxv., pp. 12 and 37 (1912 and 1913).]

The fortune of war, in the literal sense, transplanted me unexpectedly to the Caucasus, in June, 1915. As this was the last thing in the world that I had been expecting, my net, bottles, and apparatus were all left at home. But fortunately good Russian friends came to the rescue, and partly in the rooms of the Russian Entomological Society in Petrograd, and partly in the Caucasus Museum at Tiflis, some entomological plant was forthcoming, and so a good opportunity was not wasted.

It was in the evening of June 12th that we arrived at the stantsia Kazbek, where we stayed three days to rest. The weather had been threatening, but the dawn broke fine and clear, so I took advantage of the occasion to borrow an old rifle and to enlist the services of a native sportsman, and set out to try to stalk a tur, or Caucasian wild goat; there are four species of Capra peculiar to the Cancasus, without counting the ibex, which occurs in Karabagh, and Gmelin's sheep, which is found in the southern mountains. While scanning the rocks with a telescope to pick out the resting animals on the crags and peaks, I found time to turn over a few stones for earwigs. There were a few tragments of males of Anechura bipunctata, Fabr., but no living ones; probable few survive the winter, and none the spring; females were by no means rare, living in little trenches dug in the moist soil under fairly heavy stones, where the ground was neither too dry nor too wet; each of the females was attending a fairly numerous family of about a dozen well-grown progeny, I should say in the second instar; they were very nimble, and it was impossible to count them accurately. There were not many beetles, a few small Carabids and some dungbeetles being all I came across. As to Orthoptera, I only observed a very young larva of Leptophyes, at an altitude of about 6,000 feet. Of butterflies I saw but few; some well worn Pyrameis cardui up to an altitude of about 7,000 feet, and a few freshly emerged Aglais urticae, one or two Pieris rapae, a single Euchloë cardamines, and a large and small fritillary complete the list of Lepidoptera that I noticed on that sunny day in June, the whole of which, from dawn to dark, I spent on that fragrant carpet of alpine plants on the slopes and jagged crags of Nakherete. As to the tur, it is enough to say that a sweeter and more tender shshlyk it has never been my good fortune to eat.

After two wet days at Kazbek, we motored to Tiflis; that wonderful drive over the Georgian Road is still more glorious in spring than in autumn; quantities of snow made the air keen and crisp, while the June sun prevented chill, even in a motor on the crest of the pass at the Krestovaya Gora, over 7000 feet. A minute's stop at Gudaur failed to show the same colony of Forficula auricularia that I had seen there in August three years ago, and a fragment of a corpse of A. bipunctata alone rewarded my labours in turning over dozens of stones. Before the end of July, it fell to my lot to do the drive three times; there was little collecting to do, but I was able to note forty species of birds, although the seat of a motor is by no means an ideal observation post.

When at Dushet, I carelessly turned over a brick lying by the

roadside, and to my delight found a fine macrolabious male of Forficula tomis, Kol. It was the first time that I had seen this fine Russian earwig alive; it was on July 11th, and on the 24th and exactly a week later on my way back, I took the female under the same brick.

In Tiflis, a week's steady rain and mundane occupations rendered collecting impossible; the only entomological occupations were long conversations with Philip Adamovich Zaitseff, Evgeny Georgevich

König, and Boris Petrovich Uvaroff.

Nor was I any luckier in the interesting old town of Kutais, the capital of Imeretia, reputed to have been the home of Aeëtes and Medea. Two separate visits to the hilly region of Guria, the interesting district behind the Black Sea Coast from Batum to Poti were also disappointing from an entomological point of view; although I spent a number of days in the hills and forests, sometimes camping out, either by sheer ill-luck, or because it was too early in the season, or because the weather was not generally favourable, I observed little and took less. Guria is a hilly country of strongly folded Oligocene and Miocene shales and sandstones, with basaltic and trachytic intrusions. climate is moist and warm; the vine and maize flourish, and tea is cultivated by a few enterprising landowners; the hills are covered with a tangled jungle of creepers and rhododendrons. I saw very few butterflies; Gonepteryx rhamni, Pararge megaera, Pyrameis atalanta were fairly common. In Orthoptera, I found Nemobius heydeni, Fisch., Gryllus burdigalensis, Latr., Tettix bipunctatus, L., and Stauroderns bicolor, Charp., were pretty common everywhere. Sweeping casually at Samkhto I was lucky enough to pick up a fine macrolabious male of Forficula kaznakori, Sem.; which species I had hitherto only known from descriptions; it is closely related to the Balkan F. aetolica, replacing it on the eastern shores of the Black Sea. In the thickets on the Pliocene conglomerates and Maikopian sandstones and shales of Ompareti, near the station of Supsa, I found an immature Olynthoscelis, Leptophyes laticauda, Friv., and a brilliant green Podisma; most unfortunately I did not come across a male, and so dare not name it with certainty; probably it is P. königi, described by me from Bakuriani. The most interesting botanical observation was the remarkably luscious flavour of a berry, resembling a mulberry, but far superior, that wastes its fragrance on the thicket air, being apparently most underservedly neglected by the natives.

At the stantsia of Meria near Notanebi, while waiting by the roadside for a horse, I took with my fingers a pair of Parapleurus alliaceus, Germ., which, I believe, has not hitherto been recorded from the

Cancasus

On July 7th I arrived at the scorching swampy station of Evlakh, at 4 a.m., and was promptly attacked savagely by dense columns of mosquitos, which plastered my hands as fast as I swept them off. Malaria is the scourge of these marshy plains; the natives build high towers in their gardens to escape from the pest, and there sleep at an altitude above their range of flight. It was a glorious drive over the steppe in the cool morning air, with the snow-clad crest of Daghestan in the distance. At six the "phaeton" reached Geok-Tapa, where there was waiting a warm and cheery welcome from Alexander Borisovich Shelkovnikov.

I was allowed a week's holiday in this entomologist's paradise; my

fellow-guests were my old friend V. Bianki the ornithologist, with his three sons, so that all nature came in for a share of observation and My previous visit had been in September, and it was dicsussion. particularly interesting to note the difference in the fauna in the early part of July (7th-16th). In the garden there were scarcely any signs of Thisoicetrus dorsatus, F. de W., and Euprepocnemis plorans, Charp., which are so prominent in the autumn; in their place there were numbers of Olynthoscelis indistincta, Bol. This fine species was first described by Bolivar from Asia Minor, and then recorded by me, on specimens taken by König, from Mtskhet and Tiflis. Since then Uvaroff has recorded it from numerous localities in the Caucasus. In July it was very numerous in the gardens and park at Geok Tapa; I was particularly struck one day, when after a tropical rain all the morning, the sun came out at mid-day; on a shrub in the garden I saw no less than four specimens sitting boldly on the leaves, basking in the sun, trusting to their agility to escape from any dangers. As a rnle it is a timid creature, lurking among the thorny stems of the dense shrubs; its habits are much the same as those of our common English species, O. griseoaptera, but it is a great deal larger, and its leaps carry it much further; I noticed the same habit of chirping in a particularly lively manner before an evening shower. Compared with its Balkan and Mediterranean congeners, it is a size larger and more powerful than O. littoralis, about as strong and big as O. chabrieri, but less so than O. transylvatious and O. dalmaticus.

The other common Locustid in the garden was a Poccilimon which I dare not venture to identify until this very difficult genus has been once more monographed and revised. It crawls sluggishly over the shrubs and thistles, and is easy to pick up with the fingers; it seems quite defenceless, and its green protective colouring only advertises it when it is foolish enough to sit on a big blue thistle, where I have often seen a dozen or more incautiously exposing themselves, no doubt fondly imagining that they were assimilated to their environment; even on green leaves, they are perfectly easy to see. It is a pity that these delicate and interesting creatures are so difficult to preserve with

any degree of satisfaction.

Of my old acquaintances, Labia minor, L., and F. auricularia, L., were common, the former flying to light in the evenings, often in numbers. Platycleis grisea, Fabr., Pl. assimilis, Fieb., Pl. vittata, Charp., Paratettix meridionalis, Ramb., Tettix bipunctatus, tatus, L., Stauroderus bicolor, Charp., S. cognatus, Fieb., Decticus albifrons, Fabr., Nemobius saussurei, Burr, were all common and adult. Nymphs of Pyrgomorpha brachyptera, Bol., began to appear; Oedipoda salina and O. caerulescens, L., Sphingonotus caerulans, L., Aerotylus insubricus, Scop., Oedaleus nigrofasciatus, De Geer, and its slender eastern relative, O. mlokosieviczi, Bol., Sphingonotus azurescens, Ramb., all reached maturity during the last week of my visit. Of Mantids, only nymphs of Mantis religiosa, L., and Sphodromantis bioculata, Burm., were about, but on the steppe I found Bolivaria brachyptera, Pall., fully grown.

The desert had outwardly the same appearance in July as in September; the sparse vegetation was already burnt up, though Prosopis stephaniana was not yet ripe. But the Orthopterous fauna was quite different. I found no traces of Stauroderns simpler, Eversm.,

and merely a few larve of Pyrgomorpha brachyptera, Bol., which are so characteristic of the steppe in autumn. The ubiquitous Caloptenus italicus, L., only became obvious at the end of the week. No signs of Thisoicetrus adspersus, Redt., but Stauronotus maroccanus, Thunb., and St. anatolicus, Kr., were already evident. But the most striking difference was the abundance of Tmethis bilabus, Stål., and Oedipoda schochii, Sauss.; of these two ponderous fellows, the former I had not seen alive, and always regarded as a rarity; now it was common on the desert, and in spite of his clumsy build, the male is fairly active, and takes short flights; its smoky wings do not make it very obvious on the wing. O. schochii is a typical desert species; I only found three specimens in September, but in July there were plenty of it, though only on the desert. An interesting addition to the local list was Celes variabilis; the crimson-winged form was tolerably common on the steppe; the males were all deep black, and conspicuous: at first, indeed, I took them for Psophus stridulus. A single female Arcyptera truchmana, F. de W., was an addition to the local list. An interesting capture was Dericorys gibbosus, F. de W., of which I took three or four specimens in different parts of the desert. This species has sea-green and smoky wings, quite different from the pink wings of its near relative D. roseipennis; the former is fairly active and took long flights; but the latter I never saw on the wing, and was, in fact, struck by its sluggish habits, though the difference of season may account for this discrepancy; the former I only took in July, the latter only in September; D. gibbosus flew freely about the steppe; D. roseipennis sat sluggishly chewing the juicy stems of Salsola; when disturbed, it did not fly, but fell to the ground, and pretended to be dead. Other common objects of the desert were Palpares libelluloides, which often flapped across; once or twice I noticed what I took to be a big Dipteron hovering over a plant, like a Bombylius: I took one out of currosity, and found it was a hyaline-winged Ascalaphus, with dilated abdomen and apical tufts; my specimen, which incidentally gave me quite a severe bite on the finger, was handed over to my host, who provided it with a comfortable home.

But the most numerous, prominent, insistent, and self-advertising inhabitant of the steppe is the Cicada; on the desert a fairly big brown species occurred in swarms in July; in September I saw none; it filled the air with its stridulation; they are versatile musicians, with a considerable range of note; they strike up on one note, and then tune up, before settling down to their regular buzz; often enough I mistook them for Orthoptera for a moment, as frequently they stridulate like a big Locustid. They sit on the sprigs of Artemisia maritima and keep up a vigorous chorus. I afterwards noticed in the train along the shores of the Caspian, on the baking plains between Baku and Derbend, that the noise of these creatures penetrates through the rumbling of the train, and is quite audible inside the carriage where passengers are sitting talking. Often a Cicada, in flying from one sprig to another, would get his wings entangled in the grass and fall to the ground; there he would lie for nearly a minute, using terrible language, which at once attracted attention to his plight, when he could be easily caught; if allowed to recover himself he would fly off with a contented hum.

There are several problems of identity which remain to be cleared

up in connection with this desert fauna; in Stauronotus there is a muddle; apparently we have a choice of about half a dozen species, St. maroccanus, Thunb., St. brevicollis, Eversm., St. kraussi, Adel., St. anatolicus, Kr., and St. albicornis, Kr.; which is which is hard to say. I appealed to Boris Petrovich Uvaroff for his opinion; his reply is encouraging, "I see no possibility of determining species of this genus until it has been thoroughly revised. I am already collecting material for this, and shall look to you to help me in the matter." If he clears up this muddle, and the worse one of Poecilimon, he will do valuable work.

In the green herbage in the irrigated district, Locusta viridissima, L., is abundant, but I did not find L. candata on the plains. But one interesting creature occurs in the high herbage and stridulates by day, with a voice not at all unlike that of L. riridissima. I took four or five males, but unfortunately no females. I regarded it at first as a new species of Locusta, a kind of reduced L. cantans, and it was only a month later that I noticed that it is a Decticid. I sent one to B. P. Uvaroff, who made the same obvious mistake at first glance, taking it to be an altogether remarkable new species of Locusta. It is, however, a Decticid in spite of its outward appearance. It will be described in

due course, and will very probably require a new genus.

Just below the homestead there is a wild field where the buffalos graze and wallow in the muddy pools; it is a thorns paradise; Nature's own "barbed-wire entanglements" occur in the form of dense and impenetrable thickets of Paliurus australis, Rhamnus pallussii, Granata punicum, various milder forms of Rubus, and, worst of all, Eleaguus angustifolia, with long thorns like crucible steel. There, in the afternoon before my departure, I heard an unfamiliar buzz, unlike that of Decticus, and distinct from that of Locusta, yet evidently that of a powerful Locustid. Instead of a prolonged chirp on one note, it is a double note, i.e., an introductory "chip," followed at once by a longer buzzz-zz-zzzz-zz. The musician was very timid, and it required the utmost patience to stalk him down. At last I saw one, and could scarcely believe my eyes; either they or my ears were deceiving me; surely this was Locusta rividissima. In this case my eyes were deceiving me; I noticed slight differences in habits which are significant; this creature was sitting head upwards, and after a moment's silence, broke out again into song, buzzz-zz-zz-zz, but Locusta prefers to sit head downwards. Slowly and cautiously I raised my net and struck. insect disappeared, while I was held a helpless prisoner. Rhamnus pallassii held my arms; Granata punicum held my hat; Eleagnus angustifolia had seized my net; and Paliurus australis was gripping my legs. It took me a long time to release myself, and I then set to work and devoted three consecutive hours to catching a specimen of this puzzling creature; patience was rewarded and I took one male; luck brought me across the path of a female who had lost both her hind legs; I took advantage of her helplessness and committed the atrocity of throwing her at once into the fumes of poison gas. It required quite a close inspection to see that these specimens were not Locusta; the pronotum is more compressed, with better marked edges; the elytra are narrower, and the stridulating portion a little different, and the veins better marked; the ovipositor of the female has a characteristic downwards bend; and then under the first tarsal segment of the posterior legs I saw the free lobes; it was a Decticid, an all-green Decticid. A careful examination among my takings showed a second pair, already in my possession, noted of course as Locusta. As a matter of fact they are referable to the interesting genus Gampsocleis. It is a remarkable thing that hitherto I had known of no single all-green Decticid, and yet here at Geok Tapa in one week I had taken two, both new to science. In the Zoological Museum at Petrograd, I afterwards found Adelung's type of Gampsocleis ussuriensis, which is a third all-green Decticid, indeed, the first one described, I know of no others. My species is remarkably close to G. ussuriensis, from the valley of the lower R. Ussur, near Vladivostok, a long cry from Geok Tapa. Yet the difference seems quite slight; the new species differs in the absence of two dark markings on the frons, in the black-ringed antenna, well-marked edges of the pronotum, which is decidedly compressed, and in the strongly pubescent anal segment of the male, with median incisions, and in the armature of the posterior femora, which have only five or six black spinules on the under surface and on the inner margin only. The female has the subgenital plate obtusangular with broad obtusangular lobes, and in the middle of the disc a raised obtusangular lobe, soldered to the disc. I should add another difference between the habits of this species and those of L. viridissima; Gampsocleis, sp. n., stridulates in the latter part of the afternoon, and ceases at sundown, just when the evening chorus of Locusta begins with gradually increasing intensity.

In the same field there are several species of *Platycleis* of the *P. grisea* group, *e.g.*, *P. grisea*, L., *P. assimilis*, Fabr., and a third species which I have not yet identified; an addition to the local list was *Platypterna tibialis*, F. de W., of which I took a single male by chance

sweeping that same afternoon.

Acrida turrita was just maturing when I left, und Epacromia thalassina, Rossi, had begun to be a nuisance; I always felt obliged to catch a lot to see if there were not some E. tergestina among them, especially on the salt marshes. (Edipoda caerulescens, L., and the beautiful O. salina, Pall. (= gratiosa, Šerv.), and Acrotylus patruelis, Sturm., were just beginning to appear in numbers. The burning sun brought all those forms on very early; we are accustomed in our latitudes to look upon Decticids as a late maturing group, and in England O. griseo-aptera stridulates away merrily late into October, but seldom appears adult before the late middle of August; yet at Geok Tapa, O. indistincta was in full maturity in the second week of July, and I did not see an immature specimen. The other local Decticids, e.g., the four species of Platycleis and Decticus albifrons were also fully mature; in the first few days there I found one or two nymphs of the Platycleis, and saw a Decticus emerging from a nymphal skin; yet on July 23rd, at Mtskhet, at the junction of the Aragya and Kura, eighteen versts above Tiflis, I found l'aradrymadusa sordida, Herm., only in the nymph stage. Perhaps the junction of the two valleys at this point, with two rapid streams, keeps the air cool, for Mtskhet is a favourite summer resort for the residents of Tiflis, although the difference in altitude is trifling.

Gryllotalpa gryllotalpa, rather smaller than our West European specimens, is common in the garden at Geok Tapa, and sometimes this to light; Tridactylus variegatus, Latr., was just appearing on the

muddy banks of the river. *Cryllodes lateralis*, Fieb., I did not find this time, but *Cryllus burdigalensis* and *Cr.* sp.?, were common in the garden, with *Nemobius saussurei*, Burr, flying to light in considerable numbers.

Alexander Borisovich has an arc lamp on his balcony, with a sheet fastened to the wall, and stretched across to a table, and here on a still dark evening, collecting is done en masse; a dozen cyanide bottles are rapidly filled; in a few minutes the sagging part of the tablecloth is a crawling mass of Corica, which is periodically emptied and cleared up, and they are thrown away by the quart. Hawk moths come dashing around; the commonest in July and September is Theretra alecto, Hyles cuphorbiae and Smerinthus ocellatus are fairly common. Crowds of water beetles arrive, with ant-lions, Epacromia thalassina, the cricket mentioned above, Gryllotalpa, (Ecanthus pellucens, Scop., and O. turanicus, Uvaroff; earwigs come too, Labia minor and Labidura riparia are the commonest, but great rarities occasionally turn up, e.g., Forticula pomerantseri, Sem., of which the male is still unknown; four or five females have been thus taken in as many years, and also a still undescribed species. The substantial number of Rhynchota which I took were reserved for Oshanin, but I brought back a few Coleoptera. A. P. Semenoff-Tian-Shansky has named a few for me; there are Egosoma scabricorne, a fine Cerambycid, Hydrophilus profanifugus, Sem., or also H. flaripes, Scop., Arrhaphypterus shelkornikovi, Reitter, the interesting Buprestid, Inbodella dilaticollis, Sem., and the eastern Longicorn, Apatophyes caspica, Sem., all taken at light. In the garden Cicindela sublacerata swarmed on the footpaths.

The creatures which obtruded themselves most upon one's notice were the irrepressible Cicadas. The big brown one which makes the desert noisy when no other creature can bear the heat has already been mentioned. In the garden there is a smaller brown species, equally insistant, and a small green one, probably Hustovelia burriana, Horvath. Dr. Horvath erected this genus and described the species on a single stray specimen picked up by me in September, 1912; in July it swarms in the garden and park. Dr. Horvath wished to pay a delicate compliment to the Georgians in naming this elegant species attentheir poet, Rustoveli; it is a pity that this is not quite appropriate, as Geok Tapa is far out of the Georgian region of the Caucasus; it is a pure Tartar district.

July 19th found me for a couple of days at Kislovodsk, after a very hot but interesting journey of thirty odd hours from Baku, where I had been baked for two days without being able to do any collecting, past Derbend, with its fine old wall and Persian fortress. As the train approaches the junction of Mineralnya Vody, we were afforded a magnificent view of the snowy jagged range of the main Caucasus, standing out in relief in the clear morning air, with half a dozen peaks higher than Mt. Blanc, and, towering head and shoulders above his neighbours, the massive twin-headed peak of Elbruz himself, rearing up almost to 19,000 feet, in solitary majesty; the cloudless sky showed up the characteristic gentle concavity of the flanks as seen in profile.

Kislovodsk is the chief of a group of fashionable watering places; its neighbours are Piatigorsk, with its memories of Lermontoff, and Essentuki, whose bottled waters are familiar to all travellers in Russia. Kislovodsk itself is a very pleasant spa, with good music, theatres, and

restaurants; in the morning crowds of health seekers stroll about the park, sucking the chalybeate water through bent glass tubes. The hills around reach no great altitude, but are very picturesque and command a fine panorama, although Elbruz is usually only visible in the early morning. On the grassy slopes of these hills I found Forficula auricularia abundant under stones; Stauroderus apricarius, L., is the common grasshopper, but larvæ were still numerous on July 20th; its habits recall those of Omocestus viridulus, L., while its voice resembles that of St. bicolor. A grey Platycleis was not yet mature, and a young Olynthoscelis occurred sporadically. The thistle beds and clumps of shrubs sheltered Locusta caudata, Charp. I was interested to note that his stridulation is much deeper than that of L. viridissima, and the song less sustained.

On the top of the plateau I found a Decticus rerrucirorus, L., just emerging from the nymphal skin; the only stridulations audible here recalled that of Ephippigera, with a similar peculiar timbre; I traced it down to a glaucous blue Phaneropterid, probably Isophya amplipennis, that sat and buzzed on the low herbage; he sits and chirps boldly on the bluish leaves, his long hind legs stretched out conspicuously. The chirp of Gryllus campestris resounded in the lower

ground, and I took a single Gryllus burdigalensis.

In butterflies I noticed Papilio machaon, Epinephele jurtina (janira) and Colias hyale. I should add that my identification of Lepidoptera is amateurish in the extreme, and very untrustworthy, being only a

reminiscence of boyhood days.

My collecting was now done; it had been snatched at intervals in a busy time; I had still to return to Tiflis, Kutais and Guria, over the Georgian road, and back again, but had no more opportunity of collecting. Retracing the ground gave opportunities of confirming many interesting ornithological, philological, ethnological and geological observations, but that is another story.

# Descriptions of a Pterergate and two Gynandromorphs of Myrmica scabrinodis, Nyl., with a list of all the known cases of the latter.

By H. DONISTHORPE, F.Z.S., F.E.S.

On July 30th last, when hunting for colonies of Myrmica scabrinodis, at Weybridge (to be used for the experiments being carried on in connection with Lycaena arion), I was fortunate enough to discover the above mentioned forms. In one colony, the nest of which was situated partly in the ground and partly under the bark of a fir stump, I found the pteregate. It struck me as being curious as soon as I saw it, and on bottling it I at once perceived what it was.

### DESCRIPTION.

Head, shape of ♀, blackish.

Thorax pale yellow with some black marks as follows:—Pronotum slightly blackish; mesonotum with two round deep black spots; scutellum present, small but distinct, blackish.

Two small forewings are present, which possess traces of veins at the base only, the one on the right measures 2mm. in length, that on the left 7mm. only. The hindwings are represented by two very small projecting tubercles, which

The hindwings are represented by two very small projecting tubercles, which are longer than broad, and are composed of the substance of wings, not being chitinous. Legs pale yellow.

Epinotum pale yellow, spines long and straight; gaster brownish-yellow. Long 5.2mm.

The colony contained two queens, some males and brood. No further pterergates were produced, and only males hatched from the sex pupe present.

As far as I am aware this is only the second pterergate which has been taken in Britain. The other, which was taken by Keys, near

Plymouth, is described in my book (British Ants, p. 131).

The colony which contained the two gynandromorphs was nesting in the ground, a small hole in the turf forming the entrance. It contained one queen, some normal males, sex pupæ, and small larvæ. This colony has been kept under observation ever since it was dug up all the pupe hatched and produced only normal males. The two gynandromorphs were noticed at once and bottled in the field.

#### DESCRIPTIONS.

No. 1. Mixed Gynandromorph.

Head ? shape; clypeus anteriorly, mandibles, antennæ, cheeks, right temple, a thin streak on left temple, frontal carine, and a patch on left side of front red, rest of head blackish. Left eye a little larger than right eye; ocelli a little larger and more prominent than in a normal ?; antennæ 12-jointed, with 3-jointed clubs, but with shorter and stouter scapes than in normal y, left scape more the shape

of &, and without the tooth at the bend, right scape with tooth.

Thorax: pronotum red with dark patches anteriorly, in centre, and on left side posteriorly; mesonotum with distinct Mayrian furrows, the right side and the space between the furrows black, the left side red, and the right parapsis red. The space between the Mayrian furrows is channelled in centre, which is not the case in either normal 3 or ?, the rest being slightly striate; scutellum and praescutellum black on right side; metanotum black. Epinotum ?, but black at base and between the spines, right spine shorter than left; petiole small, de-formed, black at base and left corner, fixed to right half of post-petiole; post-petiole larger on left side with a dark longitudinal mark in centre, right side blackish at base; gaster more? shape and bristles, dirty blackish-yellow with illdefined darker patches and round yellow spots, with five visible segments and ordinary & genitalia.

Wings intermediate between & and ?. Legs intermediate between & and ?,

partly black, partly yellow. Long. 5.7mm. No. 2. Mixed Gynandromorph.

Head shape of ?; right mandible at base, clypeus in centre and on left, frontal area, front, temples, and occiput, with the exception of certain round spots, black, rest of head yellow. Antenne ?, 12-jointed, with 3-jointed clubs, but right scape more shape of \$\delta\$, and black above.

Thorax: pronotum yellow with two black patches posteriorly; mesonotum with part of Mayrian furrow present on right side, and a black patch, the shape of of the space between the Mayrian furrows if both were present, in centre; a broad black patch occurs on the right parapsidal furrow and a narrow one on the left; scutellum black with the exception of a red patch on right anterior portion. Epinotum black, with the exception of the outer portion of the left spine, a thin streak on right spine and the right half of the space between the spines, which are yellow. The right spine is longer than the left. Petiole black with the exception of a yellow circular patch on left anterior corner and another on right posterior corner; post-petiole, left half yellow, right half black. Wings intermediate between 3 and ?. Legs intermediate, partly black, partly yellow.

Gaster blackish, with indistinct yellow putches, with four visible segments above, and a genitalia considerably excerted at apex. Long. 6-3mm. (including

& genitalia 6.8mm.).

In 1903, Wheeler | Bull. Amer. Mus. N.H., 19, 653-683 (1903)] described and recorded all the known cases of gynandromorphic ants. These are :---

1. Formica sanguinea, Latr. (Tischbein, 1851).

- 2. Tetramorium simillimum, Smith (Roger, 1859).
- 3. Tetramorium simillimum, Smith (Meinert, 1860).
- Myrmica lobicornis, Nyl. (Meinert, 1860).
   Myrmica ruginodis, Nyl. (Forel, 1874).
- 6. Formica exsecta, Nyl. (Forel, 1874).
- 7. Formica rufibarbis, F. (Forel, 1874). 8. Formica truncicola, Nyl. (Forel, 1874).
- 9. Polyergus rufescens, Latr. (Forel, 1874).
- 10. Polyeryns rnfescens, Latr. (Forel, 1874).
- *11. Myrmica laevinodis, Nyl. (F. Smith, 1874).
  - 12. Leptothorax tuberum, F. (Adlerz, 1886).
- 13. Myrmica scabrinodis, Nyl. (Wasmann, 1890).
- 14. Myrmica scabrinodis, Nyl. (Wasmann, 1890). *15. Stenamma westwoodi, West. (Perkins, 1891).
- 16. Aztrea instabilis, F. Smith (Forel, 1892).
- 17. Camponotus ligniperdus, Ltr. (Klapálek, 1896). 18. Formica microgyna, Wheeler (Wheeler, 1903).
- 19. Polyergus rufescens, Ltr., sub sp. lucidus, Mayr (Wheeler 1903).
- Stenanma (Aphaenogaster) fulrum, Roger, sub sp. aquia, Buckley, var. piceum, Emery (Wheeler, 1903).
- Stenamma (Aphaenogaster) fulvum, Roger, sub sp. aquia, Buckley, var. piceum (Wheeler, 1903).
- 22. Leptothorax obturator, Wheeler (Wheeler, 1903). 23. Epipheidole inquilina, Wheeler (Wheeler, 1903).
- In 1914, Wheeler [(Amer. Nat., 48, 49-56 (1914)] enumerated and described the gynandromorphous ants described during the decade 1903-1913, viz.:—
  - 24. Cardiocondyla batesi, For., var. nigra, For. (Santschi, 1903).
  - 25. Anergates atratulus, Schenck (Adlerz, 1908).
  - 26. Anergates atratulus, Schenck (Adlerz, 1908).
  - *27. Formica sanguinea, Ltr. (Donisthorpe, 1909). *28. Formica sanguinea, Ltr. (Donisthorpe, 1909).
  - 29. Solenopsis fugar, Ltr. (Santschi, 1910).
  - *30. Myrmica scabrinodis, Nyl. (Donisthorpe, 1913).
- In 1914 [Ent. Rec., 26, 136 (1914)] I described another gynandromorph:—
  - 31. Monomorium floricola, Jerd. (Donisthorpe, 1914).
- And in my book [British Ants, 323 (1915)] yet another.
  - *32. Formica rufibarbis, F. (Donisthorpe, 1915).
- The two specimens described in the above note bring the total up to 34:—
  - *33. Myrmica scabrinodis, Nyl. (Donisthorpe, 1915). *34. Myrmica scabrinodis, Nyl. (Donisthorpe, 1915).
- Those specimens marked with an asterisk are British. Of the 34 above recorded cases, the writer has described seven and eight are British.

### MOTES ON COLLECTING, Etc.

AGRIUS CONVOLVULI AT CHICHESTER.—A few Agrius (Sphinx) convolvuli have been noticed here during September and early in October. Some of the insects were of remarkably small size and of worn appearance.—Joseph Anderson, Chichester.

### CURRENT NOTES AND SHORT NOTICES.

Our colleague, Dr. Burr, has been appointed Assistant Military Landing Officer, with Captain's rank, "somewhere in the East." He

sailed last week to take up his new duties.

In the Gazette of October 2nd appears the appointment of Mr. Cyril Herbert Page, N.D.A., N.D.D.—son of our colleague Mr. H. E. Page, F.E.S., and Mrs. R. Page, B.A.—as Second-Lieutenant in the Royal Garrison Artillery, 1st Hants Heavy Battery.

The South London Entomolgical Society holds its Annual

Exhibition on November 25th at 7.30.

In the April number of the Entomological News, which was considerably delayed in transit to us, we note a useful article on the Mounting of Insects, by H. B. Weiss. The apparatus consists of a vertically supported pin bearing a small cube of cork. Through this cork runs a horizontal support having, at its distal end, a prong which is thrust into the ventral surface of the thorax. The opposite end of this horizontal support, after it leaves the cork, is bent to form a little crank, by means of which the specimen can be readily turned, exposing all parts of its surface for inspection. In addition this support prevents the abdomen from drooping in the process of drying." The advantages of this method are claimed to be:—The specimen is rotatable about a longitudinal axis, the dorsal surface is preserved intact, there is an unobstructed view of the specimen, the insect can be raised and lowered, a number of specimens can be mounted on a single pin for storage or carriage, bodies are less likely to become detached, pairs can be mounted tandem on one main support, no extra label pins are needed, the vertical pin can carry a label which will not be obscured by the insect, there is a saving of time in moving specimens, and the inventor claims that it requires no additional time to set insects in this way, and that the method is readily adaptable for all sizes and classes of insects.

Some months ago we referred to a pamphlet issued by the New York Agricultural Experimental Station on "Tree Crickets injurious to Orchard and Garden Fruits," by Messrs. P. J. Parrott and B. B. Fulton. The latter author has continued his subject by a succeeding work, "The Tree Crickets of New York; Life History and Bionomics." In this he deals in considerable detail with seven species of the genus (Exanthus and one species of the genus Neovabea. "The interest in these insects centers chiefly about their remarkable reproductive structures and instincts and their peculiar oviposition habits. The song of the male, which serves to attract the female, is produced by a minute rasp on the underside of the forewing, which is scraped by a structure on the inner edge of the opposite wing. In producing the sound the wings are raised at right angles to the body and vibrated rapidly. When the wings are so raised, there is exposed on the metanotum a glandular hollow, the secretion of which is very attractive to the female. The latter climbs over the abdomen and feeds on the gland. The male takes advantage of the position and inserts the barbed capillary tube of a spermatophore into the genital opening of the female, and the sperms pass into the seminal receptacle. The spermatophore is formed in a peculiar pouch at the tip of the abdomen, by the hardening of a viscous liquid about a mass of sperms." There are a considerable number of illustrations and six plates, four of which are in colour.

We have been assured that the Doubleday Collection of British Lepidoptera will not be absorbed into the general collection at South

Kensington, but will be kept intact and separate.

The Thirteenth Annual Report of the Photographic Survey and Record of Surrey is to hand. The work is carried on by means of six sections, i.e., Architecture, Art and Literature, Antiquities and Anthropology, Geology, Natural History, and Topography. Among the 310 prints which have been added to the collection during the past year there are none dealing with Entomology. Possibly some of our readers have negatives of subjects native to the county, and we are sure prints from these would be most serviceable; while their presence in the collection would help to keep our specialised work before the public. The Collection is housed in the Public Reference Library, Town Hall, Katherine Street, Croydon. It is stored in specially designed drawers, and is open for consultation by any member of the general public from 10 a.m. to 9 p.m. every weekday. Mr. E. A. Martin, F.G.S., 285, Holmsdale Road, South Norwood, whom some of us know for his enthusiastic work on behalf of the South-Eastern Union of Scientific Societies, is the Hon. Secretary of the Natural History Section.

In the Entomologist for September Mr. H. Rowland-Brown contributed "Some Remarks on Thecla uesculi, Hb., chiefly in the South of France," in which he contends that the two forms ilicis and aesculi are specifically distinct, as asserted by most of the older authors of note. To this are added the notes of Dr. Chapman on his examination of the genitalia of the two forms, which go to show that they are very closely related, but that the more minute details arrange themselves into two definite series, and may be interpreted as indicating

two separate species. There are two plates of details.

In the same number Mr. G. T. Lile announces a genus and species of *Braconidae* as new to Britain. Mr. D. Sharp discovered the beetle *Hypophloeus linearis* in the burrows of *Tomicus bideus* in fallen branches of *Pinus sylvestris*. From the branches he bred the Braconid *Coeno-*

pachys hartigii.

In the same number Mr. A. A. Girault announces two species of Chalcidoid Hymenoptera as new to Britain and to science, viz., Coccophagus brittanicus and Apterotrix longiclava, both received from Manchester. They were reared from the Homopteron Lepidosaphes ulmi. At the same time a new form of the Hymenopteron Aphidencyrtus aspidioti was reared, which is introduced as var. brittanicus.

Our colleague, Mr. R. S. Bagnall writes an appeal in the September number of the *Ent. Mo. May.*, for material from all parts of the British Isles, to aid him in his study of the British *Compodeidae* (Thysanura).

His address is Penshaw Lodge, Penshaw, Co. Durham.

In the Ent. News for October are two articles discussing the statements made concerning Lycaena piasus and L. rhaea in the article, "Notes on the Synonymy of Boisduval's N. American species of Lycaenidae," by Dr. McDunnough, Ent. Record, vol. xxvi., page 201 (1914). The first by J. R. Haskin, of Los Angeles, does not agree with Dr. McDunnough's conclusions, while the second by Prof. H. Skinner says that the weight of evidence supports them.

We have seen the announcement of the decease of Dr. Wm. Saunders, who was the co-founder of the Canadian Entomologist, with the Rev. C. J. S. Bethune and for many years one of its editors.

SOCIETIES. 263

He was a Devonshire lad and born in 1835. After five-and-twenty years of successful business life as a wholesale and retail druggist in London, Ontario, on his retirement he became Director of the Experimental Farms of the Dominion. He was one of a small band of earnest workers in entomology, whose efforts, persistently pursued, at length obtained the recognition of the Government. In 1862 Dr. Saunders took part in the founding of the Entomological Society of Ontario, and in 1906 was elected President of the Royal Society of Canada. He was taken ill in 1911 while on a visit to Europe, his first real holiday, and never entirely recovered.

### SOCIETIES.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

July 22nd.—Parasites in ova.—Mr. Newman exhibited living examples of a Braconid (?) which had just emerged from a batch of ova of Macrothylacia rubi found at Rutham in the autumn of 1914. Locar VARIATION IN L. ORBITULUS AND A. ESCHERI. ICHNEUMON IN APHIDS.— Dr. Chapman, specimens of Latiorina pyrenaica, the first that had been bred, from the Pyrenees, and L. orbitulus var. oberthüri from the same area, but found also in Switzerland. He also showed specimens of the Ichneumon, Aphidius ervi bred from the Aphis of Ononis arrensis. ABERRATIONS OF 9 P. ICARUS. SYNTOMIS PHEGEA BRED.—Mr. B. H. Curwen, some first brood females of Polyonimatus icarus from Ranmore Common, all much suffused with blue, and several underside aberration melanotora (arcuata). He also showed a series of Syntomis pheyea interbred for the past four years. Drawings of Larvæ of T. PSI AND T. TRIDENS.—Mr. Sich, coloured drawings of the larvæ of the British species of Acronicta and pointed out the differences between the larvæ of Triaena psi and T. tridens. Variation in British A. Iris.—Mr. B. Adkin, long series of Apatura iris from many British localities and showed that the species was much more variable than it was usually considered to be. A considerable discussion took place on the occurrence and disappearance of the species in its near London localities. EPHESTIA KÜHNIELLA IN RICE.—Mr. R. Adkin, living larvæ, pupæ, and imagines of Ephestia kühniella in rice flour. Remarks on the Season. —Several members gave experiences of the present season, making remarks on Agriades thetis, Polyommatus icarus (abs. of 2 s), Celastrina argiolus, Pyrameis cardni, P. atalanta, Lithosia complanula and Euchloë cardamines.

Angust 12th.—Zew Zealand Lepidoptera.—Mr. H. Smith exhibited a number of Lepidoptera from New Zealand, including Chrysophanids, Lycaenids, and species of the giant Hepialids. Confluent A. Trifolil.—Mr. B. S. Williams, Anthrocera trifolii var. palustris with confluent forms from Somerset, and an aberration of Xanthorrhoe sociata in which the usual dark band on the disc of the left forewing was reduced to a blotch on the inner margin. Ova of C. perla.—Mr. West (Ashtead), the ova of Chrysopa perla, laid solitary on a long stalk. B. pales var. and P. plantaginis vars.—Mr. Hy. J. Turner, examples of an excessively local form of Brenthis pales var. arsilaehe taken by him on one side of one small lake at St. Moritz, Eugadine, and a series of Parasemia plantaginis varying from the normal yellow and black males to the form with a much extended white ground on the one hand, and on the other hand to the form with a much extended

black area. Report.—Mr. Edwards read his report, as delegate, to the Congress of the S.E. Union of Scientific Societies at Brighton.

## BITUARY.

Henri Jules Fabre, Hon. F.E.S.

At the great age of 92 we have to record the death of M. Jules Henri Fabre, the Reaumur of the nineteenth century. For the past 30 years he had lived and made his wonderful observations at the little village of Sérignan, in Provence. Like the mass of the French peasants, he naturally possessed that patience and perseverance which were so much called upon in the long sustained series of minute observations carried on for so many years.

The series of Souvenirs Entomologiques, in ten volumes, published from 1879 to 1907, form a great monument to his keenness of observa-

tion and his extraordinary perseverance.

"No investigator of natural phenomena has ever played so lonely a hand as Fabre did. He was almost entirely unindebted to the naturalists who had gone before him, partly because he had very little opportunity of becoming acquainted with their work, partly because he was little disposed to do so." "He thought that science was unscientific and laughable when it dealt with his entomology." These words tersely express his aspect of mind.

He must have seen how much he was handicapped in his own studies by want of early opportunities and encouragement, for we find him giving gratuitous lessons in nature-study in the town of Avignon, where for 20 years he held a small professorship in the University. Strange to say this action of his, added to his extremely retiring nature and failure to take part in the ordinary social life of the town, whereby he could advertise his ability, usually an inseparable item in the "getting on" successfully, brought to a climax the persecution of years and he was dismissed. He says himself, "La haute société, je l'évite autant que possible, j'aime mieux la campagnie de moi-même. Aussi n'ai-je vu personne et ne me suis pas rendu à l'appel du principal pour faire la tournée officièlle."

Although Darwin was a personal friend, Fabre held the doctrine of evolution in contempt, and his ignorance of most of the theories of the day and of the great mass of observations made by previous nature-workers, often led him to make elaborate experiments to obtain facts, which others had obtained in a much simpler and more expeditious way, and to come to absurd deductions from the limited facts upon

which they were based.

It was not until late in his life that Fabre's work won for him any public recognition. In 1894 he was made honorary member of the Entomological Society of France; of that of London in 1904. He was made a Chevalier of the Legion of Honour some years previous, but it was only in 1912, when rumours of extreme poverty were uttered, that a government pension was bestowed on him.

Not all Fabre's writings have been translated into English. We have "Insect Life," translated by the author of "Mademosella Mori;" "The Life and Love of the Insect," translated by Alexander Teixeira de Mattos, who has also just completed another translation entitled "Bramble-bees and others," and Bernard Miall has translated "Social Life in the Insect World."—H.J.T.

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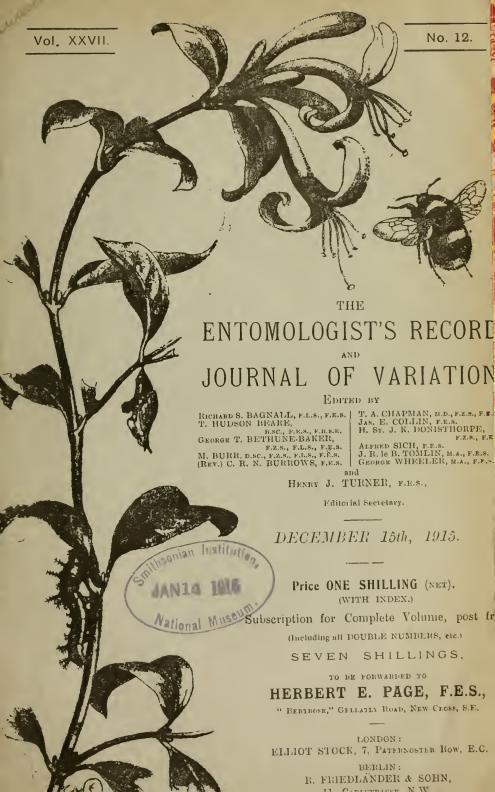
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## Myrmica schencki, Emery, an ant new to Britain.

By H. DONISTHORPE, F.Z.S., F.E.S.

### Myrmica schencki, Em.

Myrmica rubra subsp. scabrinodis var. schencki, Emery, Zool. Jahrb. Syst., 8, 315 (1895). Myrmica scabrinodis schencki, Emery, Deutsch. Ent. Zeitschr. 1908, 1782. Myrmica rubra subsp. scabrinodis var. schencki, Wheeler, Ants 566 (1910). Myrmica schencki, Bondroit, Ann. Soc. Ent. Belg. 55, 11 (1911). 56, 351 (1912). Myrmica scabrinodis subsp. schencki, Karawajew, Rev. Russe Ent. 12, 583 (1912). Myrmica scabrinodis race schencki, Forel, Mitt. Schweiz Ent. Gesell. 12, 29 (1915).

\$\times Lighter or darker brownish-red, head and gaster darker: mandibles, antennae and legs lighter. The colour is lighter and more uniform over the whole

body, than in lobicornis.

Head: frontal area longitudinally striate, not shining; temples more regularly striate than in lobicornis; antennae with scape sharply bent at the base, and furnished above with a strong transverse ridge, which however is both broader and longer than that of lobicornis, the scape itself also being longer; club of antennae three-jointed. Thorax more regularly striate; epinotal spines long and straight, longer than in lobicornis, with the space between smooth and shining. Petiole and post-petiole not so strongly rugose as in lobicornis, the former seen in profile does not form such a strong or abrupt angle, and the latter seen from above is rounder. Long. 4.5mm..5mm. (4mm..5mm. teste, Emery).

? Head and gaster blackish-brown, scutum of mesonotum with a black patch

? Head and gaster blackish brown, scutum of mesonotum with a black patch anteriorly and two others, one on each side, posteriorly, prae-scutellum, postscutellum, and metanotum black; mandibles, antennae, rest of body and legs readish

yellow. The whole colouring is lighter than in lobicornis.

Other characters as in  $\heartsuit$ . Wings with pterostigma and veins pale brown, not as yellow as in lobicornis. Long. 6mm.

Original description of Myrmica schencki, Emery [Zool. Jahrb.

Syst., 8, 315 (1895) |:-

"Diese Form wurde bis jetzt mit M. lobicornis Nyl. verwechselt und vermengt.

—Der & is von derselben durch längere Dornen des Metanotums verschieden.

Der 1. Knoten des Stielchens ist auch oben meist weniger winklig, oder sogar etwas depress und abgerundet. Die Farbe der amerikanischen Exemplare ist meistens ziemlich dunkel, schmutzig braun-roth, Kopf und Hinterleib schwärzlich.—Was aber diese Form von lobicornis besonders unterscheiden lässt, sind die Fühler des 3. Der Schaft ist dick und kurz, kürzer als bei sabuleti und selten länger als \(\frac{1}{2}\) der Geissel, bei den meisten, europäischen Exemplaren etwas kürzer, nahe der Basis stumpf geknickt."

Habitat.

According to Emery Myrmica schencki occurs in Central Europe in flat and hilly country, extending eastwards to China and Manchuria². It has also been recorded from the Northern States of America³,

Belgium⁴, Russia⁶, Switzerland⁷, and occurs in Wales.

British distribution as at present known:—Glamorgan: Sully (Hallett). A colony of this ant was discovered by Mr. H. M. Hallett, at Sully, in Glamorgan, on May 30th, 1915. He, however, took it to be labicarnis, and knowing I had plenty of the latter from various parts, he unfortunately did not send me specimens at once, when I might have got it into my book. On July 25th he visited the colony again and captured several winged females, but no males were present.

DECEMBER 15TH, 1915.

On October 25th he wrote to me to say he was sending " \u2224 \u2224 and ? ? of the Myrmica lobicornis, taken at Sully," and he mentioned that " . . . the transverse ridge on the antennæ of the ant looks unusually developed." On examining them I at once recognised that they were Myrmica schencki, Emery, a form not known to have occurred in Britain before.

Hallett tells me the nest was situated in a bank of stiff marly soil, the entrance being a small round hole, much as is made by the smaller

bees (Halictus, etc.).

As to whether schencki should be regarded as a good species, subspecies, or variety, is really not of much value, as in any case it is a quite distinct form, and all the individuals in the colony are alike.

Emery² now considers it to be a subspecies of scabrinodis, and Forel⁷ is of the same opinion, though he prefers his old name "race" to "subspecies." Forel on the other hand considers lobicornis to be a good species, but Emery also treats this as a subspecies of scabrinodis. In 1910 Wheeler³ calls scabrinodis a subspecies of M. rubra, L., and schencki a var. of scabrinodis; but in 1911 he writes [Journ, New York Ent. Soc., 19, 163 (1911)]:—"Myrmica rubra or some one of the closely allied species (scabrinodis, lerinodis, rugulosa, etc.) which were formerly regarded as mere subspecies."

I prefer to follow this later view. Mr. Hallett is to be congratu-

lated on discovering this interesting ant in Britain.

### Notes on the Swiss Rhopalocera. VII.

By the late A. J. FISON.

(Communicated by Miss L. M. Fison.)

Extracts from his letters to, and kindly lent by, the Rev. G. Wheeler.

### Miscellaneous. 1908.

Grand Hotel des Bains, Bex, May 21st, 1908.

"At Charpigny this year there seem to be more dark Papilio machaon than usual . . . . and from the light colour of the anal spot I think all must be ab. burdigalensis, Trimoulet. I also took a Papilio podalirius with an extra line. Both types are very common at Charpigny this year . . . The cold, and quite three weeks late, spring has been making up for lost time the last fortnight. I never saw things advance so rapidly. A collector has taken twelve or more Everes coretas and Scolitantides orion at Branson, and up to date too."

[Dark P. machaon were quite moderately common at Charpigny in

1913-14.—L.M.F.]

#### 2. The Season 1908-9.

Bex, May 25th, 1909.

"Last season was not a very good one . . . . In June I went for a fortnight to Champéry. At Bonaveau there were some interesting Erebia oeme with very small spots, or almost none; but my best catch was Parnassius delins, close above Champéry village, where the stream divides. A series of about twelve or fourteen taken in some forty minutes, contained finer marked females and more variation than one usually gets in these parts. On July 2nd I was at Eclépens, on my way to Yverdon, and left on the 8th. I only saw one black

aberration of Apatura iris or A. ilia, but var. clytic was common. Apaturids were not very abundant, and had been out a few days before I arrived. I took 12 Apatura iris, 22 A. ilia and 8 var. clytie. Satyrus circe and Limenitis populi were very scarce, and Strymon pruni invisible. I got, however, a very fine Araschnia levana var. provsa a mile north of Yverdon, by the lake side. On that road, too, were a good number of the three Apaturids, but I saw no dark aberrations on the Yvonand road. Melanargia galathea, with yellow ground colour, was frequent. My next five weeks at Gsteig under the Sanetsch Pass did not produce much. However, one day, on the top of the Col de Pillon, I got the darkest aberration of Argynnis aglaia that I ever saw. The upper wings were 4/5 black with fulvous spots near outer edge, more clearly marked on upper wing. The fore- and hindwing bases contained most of the fulvous colour, which spreads especially towards their lower edges. Indeed the lower part of the upper wing had a fulvous line nearly to lower edge. The underside of the forewing was about three-quarters black, containing two fulvous spots. The outer edge fulvous with two black unpupilled spots or eyes in it. Hindwing with very little black except three or four black spots forming two lines at right angles, angle just outside white centre, which lies just inside apex of the angle. Inside this angle were six fulvous or silver spots ringed with black. Each one corresponded with its fellow on the same side. Parnassius delius I did not see until August 3rd. In 1907 I saw lots of Colias palaeno on certain pastures, but at the same date and later I only saw one last season. This last year, as in 1908, I again found many dark aberrations of Papilio machaon at Charpigny. On June 9th, 1908, I got a lovely Strymon pruni there. Last summer, from the end of July to the end of August, I was at Finhaut. the Col de la Gueulaz, Emosson and Emaney valleys give very good hunting ground, but not so good as the Champery district. This curious season, 1909, flowers are few, irregular and small, but I cannot say much yet as to butterflies. On Friday a friend and I got a fair number of "swallow-tails" and a female Cupido sebrus. Glaucopsyche cyllarus seemed over, and we found no Anthocharis simplonia near the Gryonne."

I found several Erebia were in another part of the same district, on the lower slopes of the Petite Dent de Valerettes, below Vérossaz, at about 2700 feet under the Dent du Midi, June 12th, 1914. Several continued flying when the sun went in. These specimens, too, seemed to have smaller spots than some from various localities in my late

uncle's collection.—L.M.F.]

3. Polyommatus amandus, Schmid., etc.

Clarens, January 19th, 1910.

"From April 29th to May 5th, 1909, I got in and above the Avençon valley, two or three miles, several Hesperia malrae ab. taras. On June 15th Polyommatus amandus was flying on the marsh west of the St. Triphon rock more abundantly than I ever saw it elsewhere. My attempt to introduce Lycaena iolas at Charpigny is likely to fail, as the Colutea arborescens bushes do not grow or flower well. I may try this year to turn out there some female Parnassius apollo. This summer one or two "blues" were taken at Martigny in which there were male markings one side and female the other."

### 4. Miscellaneous. 1911.

Charpigny, July 3rd, 1911.

"Looking at my Brenthis selene to-day, I see if you cannot get any at the Meienthal, you might perchance get almost the identical forms in the Murgthal, September 3rd, 1904. The only difference I can see (I have only one from the Murgthal) is that the Wassen flies are a shade lighter in general colour underside. Also in the underside hindwing the black centre of the largest red spot in the band next body, is rather more obscured with yellow dust. There is some of this dust on the Meienthal flies on the same spot, but much less on specimens from other parts . . . I got three Apatura iris at Charpigny. There are some every day on the trees north and east of La Tête. A friend got Lycaena arcas and six or seven fine Coenonympha tiphon on the Aigle skating ground."

The form of Brenthis selene referred to has purple suffusion com-

parable to Brenthis pales ab. napaea. - G.W.]

### Certain Egyptian Urbicolids.

By CAPT. P. P. GRAVES, F.E.S.

During the last two months I have had some opportunity on odd afternoons, when military work has not been too pressing, of paying some attention to the habits of certain Urbicolids of Egypt. These are Chapra mathias, Baoris zelleri, Gegenes nostrodamus and Hesperia

evanida (amenophis, Rev.).

1. Chapra mathias.—At the date of writing, October 25th, Chapra mathias is practically over. It was pretty frequent in August, September and the early part of the present month, always in or near cultivated ground. I took a specimen in the third week in March this year and am of opinion that there are two or three broods of this fine "skipper," if indeed it is not continuously brooded during the hot season.

C. mathias is a stronger and faster flier than any of its relatives in this country. When startled it disappears like a flash, and though approachable when feeding on any attractive blossom, or late in the afternoon when it rests with closed wings on clods of earth, stones and sometimes on the branches of shrubs, it is not an insect one can afford to miss. In the heat of the day it sometimes developes the habit of flying up and down at top speed, usually in front of, and along, a wall facing the sun, or up and down a path or the side of a road.

I have not yet been able to note any amatory displays on the part of this insect, save the chasing at top speed of a ? by a 3. I have seen one ? oviposit on what appeared to me to be a rice-plant. The egg was laid with remarkable speed and absence of preliminary explorations at the junction of a blade and the stem proper of the

rice-grass.

2. Baoris zelleri was out in September at Meadi, a suburb of Cairo, on the Helouan Railway. There it occurred—alas, usually in bad order—in gardens and in shady places such as hedges, under trees, etc. I have a strong impression that B. zelleri, in its typical form at any rate, requires some shade and moisture. I have never yet taken it in open ground in Egypt, and my only Syrian zelleri was netted in the hottest and moistest part of the Dog River Valley, near Beirut. In

speed of flight B. zelleri is little inferior—over short distances—to C. mathias. It is as shy, if not shyer, pugnacious, attacking its own or other species which throng it on a coveted flower, and always seems to rest towards evening on plants or bushes. It is distinctly "earlier to bed" than C. mathias, much earlier than G. nostrodamus, and though conspicuous when settled, from its golden powdered underside under the vertical rays of the sun, is decidedly less visible toward evening

against a green or greenish-yellow background of leafage.

In the collection of Egyptian Lepidoptera at the Ministry of Agriculture, Cairo, is a handsome Baoris, somewhat damaged, from Amrieh or Amriya, in the Maryut Steppe. It looks like an all-black B. zelleri. Can this be a form of Baoris (Parnara) borbonica var. holli, Obth., which, according to Dr. Reverdin, is decidedly close to B. zelleri in the conformation of the 3 genitalia. I have not seen typical B. (Parnara) borbonica figured, and my recollection of M. Oberthür's figure (by M. Culot) of var. holli is a trifle vague. Perhaps this Amrieh insect is a local steppe race of the typical B. zelleri, which has lost the yellow markings of the upperside. B. zelleri, I may add, was over by the end of September this year.

3. Gegenes nostrodamus.—This species is still abundant as it has been since the end of August. It is common all about Cairo, also near Marg, and on the desert edge between Kassassin and Tel el Kebir,

though I have not yet taken it deep in the desert.

So far, though on the look out for  $\ell \bar{\ell}$ . lefebrrii, I have not certainly taken it in Egypt. I have had my doubts about certain specimens, but none that I have taken here seemed so black or so square winged as lefebrrii as I know it from Beirut. However, Dr. Reverdin must have the last word as regards my Egyptian (iegenes.

In this connection I should like to note that—

(1) Fresh 3 G. nostrodamus sometimes show very faint traces of (a) three apico-costal spots, (b) of the two or more submarginal pale spots on the upperside of the anteriors.

(2) The upperside light markings on the anteriors of the fresh ?

G. nostrodamus are yellowish-cream and often yellow. They seem to wear quickly to yellowish-white, and finally to white.

(3) The upperside of ? G. nostrodamus is always brown with a yellowish mixture, in my experience. The tone differs considerably, but seems never to approach the depth of blackish-brown so noticeable in G. lefeberii.

G. nostrodamus is not easily caught when flying wildly around in the sun, but given an attractive blossom, e.g., Tamarisk flower, on October 23rd, at Kassassin, nothing can be more easily captured. It frequented these Tamarisk flowers with Chilades trochilus, a few Zizera karsandra and Virachola livia 2s, and could almost be taken with the hands.

I made the following notes of the behaviour of a  $\beta$  and  $\circ$  G.

*nostrodamus at Kassassin.

(a) 3 alights on a flower spike and runs up it towards 2 already perched thereon. Then stops and proceeds to move his wings, opening them about two-thirds of their full expanse, and at times seemingly depressing and further expanding the posterior wings.

(b) I flies about three yards and settles on a plant, 3 follows

suit and repeats the previous performance.

(c) ? returns to Tamarisk. 3 follows and again repeats previous movements, this time apparently raising and lowering his body from the flower spike by movements of the legs.

(d) ? after several minutes begins to respond to 3 s demonstrations by partly opening and quivering her wings. 3 walks up to ? and turns round several times. ? finally flies off rapidly with 3 in pursuit.

4. Hesperia evanida.—I took one 3 and two 2 s of this interesting species in the desert, near Kassassin, on October 23rd, an interest-

ing record, proving that this species is at least double-brooded.

Convolvulus lanatus was common where it occurred. I have nothing to add to Colonel Mander's account—would that he had been spared to give us more of his observations—of this "skipper," except that the butterfly, when settled on the desert sand or stones, is extremely hard to see, the white and olive underside closely resembling a variegated quartz or limestone pebble.

## Some Lepidoptera of Guernsey, 1915.

By the REV. F. E. LOWE, M.A., F.E.S.

For the first time for twenty years or more the writer was in Guernsey during the whole summer. I hoped by renewing my acquaintance with what were once familiar hunting grounds, to renew some of the pleasure with which I exploited these places in days gone by. There was also reason to suppose that possibly there were not a few species of lepidoptera in the Island which had not yet been recorded. Though we had a splendid summer, and insects were very abundant, there was little in the way of discoveries to reward diligent work. I have reason to fear, on the other hand, that the number of species has declined, and that the enormous extension of greenhouses and the frequent destruction of trees to accommodate them with sufficient sun, and the cutting up of many pastures for bulb-growing, have considerably reduced the numbers of our butterflies and moths. In two important respects, it must be admitted, my investigations were seriously handicapped, I could neither "sugar" nor use the attraction of light. Owing to the war, military authority prescribed the use of light under severe limitations—which were especially stringent by the coast. Thus my enjoyable stay of five weeks at the extreme south end of the Island, at the Pleinmont Hotel, from June 22nd to the end of July, was robbed of more than half its entomological possibilities, and there was added practically nothing to our list of the local fauna. In a few instances, where only a single specimen of a species had been recorded, and on what seemed sometimes doubtful authority, I was able to give fresh testimony to its occurrence. The season opened late-due perhaps to drought. An entry in my diary on June 21st reads: "first rain for a month." So if "a drip in June, sets all things in tune," any little discordant note may be accounted for by this month's short-

My first important country walk was on April 19th, to the cliffs, beyond Petit Bôt. Pararye aegeria ab. intermedia was to the fore. Larvæ of Dasychira fascelina, noted very small; also a few of the "oakeggar," Lasiocampa quercus. On May 11th the first brood of Rumicia (Chrysophanus) phlaeas was out with Pararge megaera. Larvæ of Melitaea

cinxia were wandering, having left their winter quarters. On this day I was surprised by being compelled to yield my quarry to an unexpectedly agile entomologist. I had missed, with a rather careless stroke of the net, a geometer—probably Xanthorhoë fluctuata—it flew a couple of yards, and I made for it in earnest, but before I could reach it a swallow dived between us, missed the moth, doubled back and caught

it, all within two feet of my pursuing net.

May 27th. Melitaea cinxia was still in the larval stage, and the first brood of Polyommatus icarus on the wing. P. megaera was very numerous. [Here I may note a capture which really took place May 18th, 1914, but which I have not before recorded, of a very beautifully fresh female P. megaera ab. medio-lugens. This probably is very rare, as it is not "stocked" by the chief continental dealers. It is a very striking aberration, in which the whole of the space between the two transverse lines of the forewings is filled with deepest brown, almost black, forming a strong band, the wing-rays thickened considerably with the same colour, and the whole of the basal area to the centre of the hindwings, much suffused. Seitz says that this form is reported to almost replace the type on some parts of the Upper Rhine. I much doubt the truth of this report, because the dealers do not offer it for sale.]

June 21st. I took Arctia villica, Nemoria viridata, and Perizoma flavofasciata (decolorata) fairly common, and Epinephele jurtina abun-

dant.

June 22nd. Satyrus (Hipparchia) semele began to be common, as also Anthrocera (Zygaena) trifolii, both of which increased in numbers to an enormous extent during the next ten days. Adscita (Procris) statices was also widely distributed and numerous, and M. cinxia became common. I got one nice aberration. I was certainly not expecting Epinephele tithonus on June 23rd, but males were out in some numbers—surely a very early date. The females did not appear until the 29th.

On June 25th Xanthorhoë galiata first showed up. Larvæ and pupæ of the Dianthoeciae were scarce, on and under plants of Silene maritima. D. capsincola and D. capsophila are generally not hard to get, D. conspersa more rarely. I worked very hard for Dianthoecia luteago var. lowei—pupæ. I only got three in all. These emerged successfully June 26th, 27th, and 29th. The last has none of the orange tone of lowei, but seems to be a veritable var. barretti—which form I should say is not very near the French argillacea from Digne.

June 30th. Some larvæ of M. cinxia were still feeding, consequently a few fresh imagines were to be taken up to almost the end of July. Under broom, and heather growing like mats on rocks, larvæ of Selidosema ericetaria and Lithosia caniola were to be found, the latter commonly. I bred a few of each. Another interesting insect to breed again was Dasychira fascelina. I took twenty larvæ and got from these seventeen imagines. The first, a male, emerged July 15th, the last on the 30th. These dates agree with my old experience of this species in Guernsey. I notice that Newman and Leeds give May and June as the time of flight. It is never so here. This year I took a freshly emerged female on August 16th, the first I have ever taken in the imago stage, but as I have seldom been in Guernsey in July or early August, there is nothing extraordinary in this. Our D. fascelina is the slaty-grey form. While larva hunting it was a disappointment not to

find a single Pachygastria (Lasiocampa) trifolii. For many years I have not seen a larva of this species—in the "eighties" I used to find it abundant. I fear it has become almost or quite extinct with us. Two Miltochrista (Callegenia) miniata were beaten out of hedges at La Grande Mare. This pretty thing is of rare occurrence. I also obtained a series of Coremia unidentaria, important, as up to the present its only Guernsey representation has been an odd specimen which came to light some years ago in my study. At the same time and place Cabera exanthemaria was common among sallows, another insect which had hitherto been on our list, also only not on my authority but based on

Here I may be permitted to notice other captures which have a local interest apart from their true value. Craniophora (Acronicta) ligustri, which has only been taken once before. On August 20th Scotosia dubitata obligingly flew into the house and was caught. The late Mr. Luff says in his catalogue of our "macros": "have seen two specimens." Whether he means he had seen two which he was not able to box, or whether, as is I think more likely, some one showed them to him, and he doubted their local origin, must remain uncertain. It was pleasant to have a nearly full grown larva of Eumorpha (Choerocampa) elpenor brought to me for identification, as this, too, has not been noted before in any stage of its transformation. It was taken crawling on the ground in the well known "Caledonian Nursery." Noctua subsequa is also ana ddition to our recorded fauna. This with Hyponomeuta plumbellus I think completes the list of new captures.

Another insect which seems to be losing ground is the recently introduced Tortrix pronubana. I have only seen one for certain this autumn. Gnophos obscurata, a scarce insect here, provided me with four rather worn examples from the Gouffre on August 23rd. I have never taken it, or the larva, except in this particular neighbourhood. Eubolia peribolata, one of our specialities, was not abundant, nor widely spread. Callimorpha quadripunctaria (hera) was certainly below the average in numbers, and gave me no var. flarescens. Agrius convolvuli afforded a pardonable thrill of pride, not unmixed with fear, to three or four people who brought me specimens, but we suffered from no invasion in force from this annual visitor.

On my return home I was able to do a little "sugaring" during August and September in the seclusion of my own garden in town. In some years I have taken good things, such as Leucania ritellina, L. albipuncta, Agrotis lunigera and Leucania putrescens. Not so this year. With the exception of Noctua subsequa and Catocala nupta, a rarity with us, all the moths were without interest. The number and variety of Noctua pronuba was astonishing, among them I picked out two or three good ab. innuba. There was a sprinkling of Noctua rubi, N. umbrosa, a few Agrotis saucia and A. suffusa, and A. puta second brood, with the usual crowd of Polia Haricineta, middle and end of September. The "old ladies" drank heavily for some five weeks. Caradrina quadripunctata and C. ambigua are always common. While on the subject of the Caradrinae, it is curious to note the rarity of other species of this genus. I took one C. taraxaci, July 18th, at flowers of ragwort. Only the second known to have occurred here. Mr. Luff and myself are credited with one, each, of C. morpheus. As yet there is no record of C. alsines. Of six fine pupe of Gortyna ochracea got from thistle stems

three only emerged. A fine female *Heliophobus hispidus* was bred on September 23rd, from a larva taken at Pleinmont.

I would conclude these very unsystematic notes with a few general

observations about certain butterflies.

Goneptery: rhamni.—Saw one male August 13th, and a female on 23rd. This is a very scarce insect here, and I suspect an immigrant.

Vanessa io.—I saw one on August 14th. This, too, is a species that I can hardly think is always with us. For years together it is not seen, and when seen, only one or two in a season. I do not think I could have taken, had I wished it, ten specimens in the 35 years I have lived here.

P. atalauta.—Has been very abundant.

Pyramcis cardui.—Promised well in the spring—hibernated specimens were common. The autumn emergence seems to have been small.

Polyommatus icarus.—The females of the second brood were remarkably fine—blue forms—of hundreds that I saw on one day feasting on wild thyme, August 26th, I only observed one female of the brown form.

Pieris brassicae.—Strange to say my best catch this season was a female with a widened black border of forewings with extended dashes to the two black spots on the disk—these are also united by a black suffusion. The whole of the base and the costa are also exceptionally dashed with black. It comes very near var. wollastoni, as depicted by Seitz, from Madeira, the additional markings make it a very handsome insect.

Colias edusa.—One only have I seen, and it was gone before I could identify the sex.

Aricia medon.—As usual was very scarce.

Plebeius aeyon (argus).—Though it does occur I did not meet with it.

Callophrys vubi .- Our only "Hairstreak" was not abundant.

Of "Skippers," strange to say, we have none.

Melitaca cincia.—I am very glad to be able to report that this species shows no signs of diminution in numbers, rather, I think, it was more abundant than in many recent years. It was late. I was not on the cliffs in time to chronicle its first appearance, which is generally the last week of May, but it was at its height nearly three weeks later than usual, viz., about June 30th.

Hipparchia semele.—Was excessively common—it is generally of

small size in Guernsey, and this year was no exception.

Epinephele jurtina.—The abundance of this species was perhaps the most remarkable. A patch of ragwort some twelve feet across, one morning, I found alive with butterflies. They were literally in hundreds. I examined them carefully for aberrations, and all were jurtina with the exception of a single male E. tithonus.

CORRECTION.—The persistence of error, in spite of persistence of editorial struggle, is well exemplified in line 4 of page 241 where "Mr. Lachlan" should of course be "Mr. McLachlan."—H.J.T.

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## MOTES ON COLLECTING, Etc.

Mr. Muschamp's Spanish Captures.—More information desirable. —I am quite sure that numerous readers of this magazine have been surprised at some very interesting and remarkable records of captures made by Mr. P. H. Muschamp, in Spain, last year. These records seem all the more remarkable by Mr. Muschamp's making them without further comment than that he had taken certain species, or forms of species. Actually they may greatly revise our knowledge of one species of butterfly and a local form of each of two others. It is of course desirable that these records should be as ample as possible, and I venture to suggest that it would be most interesting if Mr. Muschamp could see his way to let the readers of the Ent. Record have a short article on his captures of the following species:—

1. On page 128 of this magazine Mr. Muschamp records that at Pajares, in the north-west of Spain, he took "a few *Tarucus theophrastus* flying with *Polyommatus boeticus* over a mixed barley and pea-field."

T. theophrastus is a well known and widely distributed species in North Africa, but the few undoubted specimens that have been taken in the extreme south and south-east of Spain led one to suppose, previous to the present record, that the species was probably migratory and doubtfully native. Staudinger's Catalogue, the 1902 edition, gives Spain south, as a locality, without details. Undoubtedly the best authority on this species in Spain is Carl Ribbe's Lepidopteren Fanna von Andalusien, 1909-12, an exceedingly careful treatise on its subject, and which deals with the distribution in Spain of all species occurring in Andalusia. Ribbe says of this species, "at Algeciras I obtained two worn specimens on the seashore at the commencement of April, 1905, as I was going towards the landing stage of the Gibraltar steamer: Staudinger gives Hispania, and Korb writes me that he has taken T. theophrastus in Murcia in April, on a thornbush." The latter record evidently refers to a single specimen, and we are thus reduced to the small number of three examples, about which there should not be much doubt; but it is to be noted that Ribbe says his specimens were worn, and I am not by any means certain that it is possible to distinguish in all cases worn examples of this species from the vastly more abundant (in Spain) T. telicanus. The latter species is of course widely distributed in Spain. Mr. Jones and I found it commonly in May, 1913, at Albarracin, and it is interesting to note that Dr. Chapman mentions in Transactions Ent. Soc. London, 1907, p. 161, that he found "Lycaena telicanus abundant in all stages except the pupa" in north-west Spain.

2. On page 190 Mr. Muschamp says, "In the same meadow I took three Argynnis adippe var. cleodoxa, and expect I might have taken plenty more." This was at Puente de los Fierros. So far as I am aware these are the first recorded var. cleodoxa from Spain or Portugal. There is of course a form of adippe which is widely distributed in Spain without silver on the underside, and which is thus a parallel form to var. cleodora. This form has, however, not the ochreous ground colour underside of the central European var. cleodoxa, but it is simply an unsilvered form of the typical Spanish A. adippe var. chlorodippe, and it has, like this, the underside of all the wings green in ground colour. This is the ab. cleodippe of Stgr., and it occurs freely with var. chlorodippe in certain localities in Spain. Dr. Chapman says, Transactions Ent. Soc. London, 1907, p. 161, he found in N.W. Spain "A. adippe rather chlorodippe than type form, but not so marked as in Central Spain," whilst I have one example of ab. cleodippe, taken at La Granja in 1905, which has less green on the underside than usual, but it is

not var. cleodova by any means.

3. On page 189 Mr. Muschamp records from Puente de los Fierros, Ayriades coridon var. albicans. This form of A. coridon is of course abundant in many localities in Andalusia, and is especially attached to the environs of the city of Granada, but I very much doubt, in spite of Staudinger's Catalogue, which states that it is found in Arragen, if it has ever been found hitherto elsewhere. I have not much doubt but that Staudinger's authority is the Catalogo de los lepidopteros de la Provincia de Teruel, by Bernardo Zapater and Maxamiliano Korb, which states, "Lycaena corydon var. albicans, Albarracin, on the sunny banks, July, rare." I have seen and captured a great number of A. coridon at Albarracin, but there were none of them that could be called var.

albicans. Of course the common Central Spanish form var. arragonensis, if it has been on the wing for some time, becomes almost white, and has thus some resemblance to var. albicans, for a description of which one cannot do better than refer to the last volume of Tutt's British Butterflies, pp. 51 and 52. It would be important to know if Mr. Muschamp's specimens were all var. albicans, and if so how many there are, or if there were any var. arragonensis amongst them. and if so how many.

It will of course be borne in mind that both Pajares and Puente de los Fierros are in North-West Spain, where the rainfall is one of the heaviest of any district in Europe, and that the climate there is totally different from that of the sunburnt Mediterranean shores.—W. G.

SHELDON. November 5th, 1915.

Anacampsis coronillella in Kent.—On the occasion of the Field Meeting of the South London Entomological and Natural History Society, at Otford, Kent, on June 19th, 1915, I took a specimen of Anacampsis coronillella by sweeping. This rare Gelechiid has hitherto only been taken at Mickleham, in Surrey, as far as the British Isles are concerned. Mr. J. H. Durrant kindly confirmed my identification of the specimen. It would appear certain that the larva feeds on some other foodplant besides Coronilla, as the field where this moth was taken was not in the neighbourhood of any cottage garden where Coronilla might have been growing.—Alfred Sich, Corney House, Chiswick.

Where does C. Boreata hide during the daytime?—Can any of our readers familiar with this insect throw light on this question? A friend of mine asked if I could send him a series of this species. I answered I should only be too pleased, but that a light would not be allowed on the ground, so that it would scarcely be possible to get them until after the war. To this he said, "Why go at night? Why not box them sitting about in the afternoon?" I confessed my ignorance as to this habit as, although I had seen hundreds of C. boreata at night, I had never noticed them in daylight. However, I was game to try. Accordingly Mr. Turner and I reached the ground about three o'clock on November 6th, and diligently searched and beat the birches, gorse, etc. Our search produced nothing; the contents of our umbrellas leaves only; Mr. Turner's remark was, "We are too early." I dissented, but agreed to go a fortnight later. On reaching home I consulted my note book and found as under:—

"1875, November 27th, common; 1885, November 27th, very common but worn; 1886, November 20th, common, condition fine, November 27th, still common, condition good; 1887, November 12th-26th, common; 1888, October 27th; November 17th, very common; 1889, November 2nd, November 16th, common; 1891, November 14th, in fair numbers: 1892, November 12th, common; 1893, October 23rd, November 11th, common; 1895, November 16th, common; 1896, November 21st, in fair numbers; 1905, November 18th, plentiful."

We tried again on the afternoon of November 20th, and our total bag for two hours' work was two  $\mathfrak P$ s. This was conclusive proof that the species was out, although not a single  $\mathfrak F$  did we see. As the trees and gorse were beaten and searched systematically they could not have been there. Search among the heather and gorse stems on bended knees revealed nothing. At least, where was defoliaria, that also occurs plentifully in the locality? We returned to the station con-

siderably chastened as to our prowess on the field, but thirsting for more knowledge. H. E. Page. November, 1915.

### CURRENT NOTES AND SHORT NOTICES.

In the September number of the Ent. Mo. Mag., Mr. Edwards announces a Dipteron, new to science and to Britain, under the name Plastosciara keilini, bred from larvæ found at Barton Mills, Cambs., in rotten wood, in large numbers.

Our colleague, Professor Hudson Beare, F.R.S.E., F.E.S., has, we understand, diverted all his energies into the making of munitions.

Our colleague, Captain Burr, M.A., D.Sc., has a paper in the October issue of the Jour. of the Royal Micro. Soc., "On the Male Genital Armature of the Dermaptera," Pt. I., with five plates and three text figures. In this first part the Protodermaptera (except Psalidae) are dealt with in much detail. Two previous authors have written on this subject, H. W. Verhoeff, "Ueber Dermapteren, I. Versuch eines neuen, naturlichen Systems auf vergleichendmorphologischer Grundlage und ueber den Microthorax der Inseckten," in Zool. Anzeig. (1902), and Dr. F. Zacher, "Studien über das System der Protodermapteren," Zool. Jahrb. (1911). The former paper, although of considerable merit, was not fully appreciated by students on account of "the entire absence of figures, the employment of a number of new characters under new and unfamiliar names, which are nowhere explained, the author's ignorance of the literature of the subject, and the rather obscure language which he employed." "Zucher's work has a double virtue; it not only has its own inherent goodness, i.e., the actual original observation, but it has a key to Verhoeff rendering his crabbed words intelligible." The present contribution is really a review and supplement to Zacher's pioneer papers, based upon an immense amount of material more than was then available, and very considerably modifies Zacher's results, in many parts based on only meagre material. The matter here published was really intended to form part of an introduction to Dr. Burr's projected Monograph of the Dermaptera of the world, which he now has to indefinitely postpone owing to the war. The more primitive earwigs, the Protodermaptera, are here dealt with, omitting the more difficult and large family, the Psalidae, which will be considered in a second part. Part III. will deal with the higher earwigs, the Eudermaptera. The Family, Sub-family and Generic characteristics are all set out in tabulated form, and the species are also dealt with in the same way. There is no doubt that this paper is the most important on this subject up to the present time, based as it is, by a master of the subject, on such abundance of material.

In the October number of the Ent. Mo. Mag., Mr. Norman H. Joy describes a new species of Coleopteron, Meotica exiliformis, which he has separated from M. exilis. It is probably generally distributed; specimens have come from Lundy 1s., Berkshire, Norfolk, etc. Mr. E. A. Butler at the same time describes a Capsid Homopteron new to the British list, Brachyarthrum limitatum, hitherto recorded only from Scandinavia, Finland and Bohemia. It was found in Epping Forest in some numbers on aspen.

The third number of the quarterly Jour. of Ent. and Zool., from

Pomona, California, contains the following articles:—"The Biology of the N. American Crane Flies," by C. P. Alexander; "Some inhabitants of the Round Gall of the Goldenrod," by Chi Ping; "Aphidae of California, IX," by E. B. Essig; all of which are well illustrated, as is usual in this publication.

In the Entomologist for October, Mr. G. Meade-Waldo figures and shortly diagnoses a new aberration of Envoa (Agrotis) corticea, in which the clayiform and orbicular stigmata are almost obsolete. He

names it ab. obsoleta.

In the same number Mr. Cecil Floersheim commences some further "Notes on the Papilionids," in continuation of those which he at various times handed to the late Mr. Tutt for inclusion in his works on British Butterflies.

Further Notes on Strymon (Thecla) aesculi are contributed to the Ent. for October, by Messrs. G. T. Bethune-Baker and H. Rowland-

Brown.

The following is the list of Officers and Council who are nominated for the South London Entomological Society during the ensuing year. President, Hy. J. Turner, F.E.S. Vice-presidents, A. E. Gibbs, F.L.S., F.Z.S., F.E.S., and R. Adkin, F.E.S. Treasurer, T. W. Hall, F.E.S. Librarian, A. W. Dodds. Curator, W. West (Greenwich). Editor of Proceedings, Hy. J. Turner, F.E.S. Hon. Secretary, Stanley Edwards, F.L.S., F.Z.S., F.E.S. Council, S. R. Ashby, F.E.S., B. S. Curwen, F. W. Frohawk, F.E.S., M.B.O.U., W. J. Kaye, F.E.S., D. R. Morford, W. G. Sheldon, F.E.S., T. H. Stallman, A. E. Tonge, F.E.S., and C. B. Williams, B.A., F.E.S.

## SOCIETIES.

THE ENTOMOLOGICAL SOCIETY OF LONDON.

October 6th, 1915. - The Honble. N. Charles Rothschild, M.A., F.Z.S., President, in the Chair.—Election of Fellows.—Messrs. Arthur Gibson, Entomological Branch, Dept. of Agriculture, Ottawa, Canada, and Harold Beck Williams, 82, Filey Avenue, Stoke Newington, N., were elected Fellows of the Society. LIVING LARVE OF LYCENA ARION. - Capt. Purefoy exhibited young larvæ of Lycaena arion, with an accompanying ant. Drawings of Lycenid Larve.-Dr. Chapman exhibited drawings of various Lycenid larvæ with the epidiascope. DUTCH CHRYSOPHANUS DISPAR.—The Hon. N. C. Rothschild exhibited four specimens of Chrysophanus dispar, taken this year in Holland, apparently identical with the extinct British race. A curious case of Synchyptic Resemblance.—Dr. Chapman exhibited a specimen of a Dipteron, a species of Nemotelus (Fam. Stratiomyidae), which was quite common where the cases of Luffia ferchaultella occurred, the cases of Luffia being imitated by a spider (Cyclosa conica). This Dipteron at rest also closely imitated the Luffia cases. A NEW ABERRATION OF EUXOA CORTICEA.—Mr. G. Meade-Waldo exhibited a new aberration of E. corticea, Hb., taken in his light-trap at Hever, Kent, in July; the specimen, known as ab. obsoleta, showing only the faintest trace of the orbicular and reniform stigmata. Proportions in Mongrel Families. -Mr. L. W. Newman exhibited a very long and varied series of Aplecta nebulosa and its varieties ab. robsoni and ab. thompsoni and intermediate SOCIETIES. 283

forms, bred from a male and female both of the robsoni form, the percentages being: robsoni (including intermediates) 50%, typical specimens 26%, thompsoni 24%. Also a series of Boarmia repandata var. conversaria, from a pairing obtained between a typical light Hunts ? crossed with a conversaria 3, every specimen being var. conversaria and every one a 9. A NEW Coccid.—Mr. E. E. Green exhibited specimens and drawings of a new British Coccid, discovered at Camberley upon grasses in uncultivated meadows, referable to Signoret's genus Fairmairia (now known as Parafairmairia). Remarkable Hymenoptera.— The Rev. F. D. Morice exhibited:—(1) Gynandromorphous Hylaeus (Prosopis) brevicornis. (2) Halictus luevigatus 3. In this specimen there were only two cubital cells in each upper wing, as in Dufourea, Halictoides, etc. (3) A larva (in spirit) and numerous imagines—all ? s—of the Sawfly Pteronus (Lophyrus) sertifer (="Tenthredo pectinatarufa" of Retzius) with cocoons from which they emerged. Further OBSERVATIONS FROM DR. G. D. H. CARPENTER.—Prof. Poulton said that, since the June meeting of the Society, he had received several interesting letters and boxes of specimens from Dr. Carpenter, and read and exhibited some of them. LIVING MYRMECINA GRAMINICOLA.—Mr. Donisthorpe exhibited a colony of Myrmecina graminicola, Latr., which he had kept in captivity for over five years, his object in showing this colony being to call attention to the number of winged females which had been reared in the nest this summer. The following papers were read:—"Observations completing an outline of the Life History of Lycaena arion," by T. A. Chapman, M.D., F.Z.S., F.E.S. "Further observations on the last stage of the larva of Lycaena arion," by F. W. Frohawk, M.B.O.U., F.E.S. "A contribution to the Life History of Agriades escheri, Hb.," by T. A. Chapman, M.D., F.Z.S., F.E.S. "On the early stages of Latiorina (Lycaena) pyrenaica, Boisd.," by the same. "Notes on the early stages of Scolitantides orion, Pall.," by the same. "New Lepidoptera from the Schouten Islands," by J. J. Joicey, F.L.S., F.Z.S., F.E.S., and G. Talbot, F.E.S. "Some new Parnassii," by A. Avinoff, F.E.S. "A new Micropterygid from Australia," by A. Jefferis Turner, M.D., F.E.S. "Record of some new species of the genus Teracolus occurring in the northern territories of the Gold Coast, W. Africa," by. G. C. Dudgeon, F.E.S. "Glossina morsitans, Westw., some notes on the parasitisation of its pupe," by Hereward C. Dollman, F.E.S.

## THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.

August 26th.—Two Species of Phyllotoma.—Mr. Main exhibited leaves of the sycamore in which were the larvæ of the sawfly Phyllotoma aceris, and leaves of alder in which another species of Phyllotoma fed in a somewhat similar manner. S. American sexually dimorphic Butterflies.—Mr. Edwards, butterflies from S. America of the genera Cybdelis, Cyclogramma, Catonephile and Myscelia, showing marked sexual dimorphism. A Hybrid Agriades.—Mr. Newman, a "blue" captured in Kent in July, which he considered a hybrid between Agriades covidon and A. thetis, from its colour and markings. Chrysopa ova.—Mr. Bunnett, ova of the lace-wing Chrysopa plava, each laid on a stalk which were assembled in bunches. Italian Lepidoptera.—Mr. C. B. Williams, a box of Lepidoptera he had met with in the

Italian Val Formazza, from Domodossola leading up to the Tosa Falls. Aberrations of Coccinella.—Mr. Ashdown, two aberrations of Coccinella bipunctata, in which the spots were enlarged and united in a very unusual manner. A RARE COLEOPTERON.—Mr. West (Greenwich), a rare Coleopteron, Seymins arcuatus, presented to the Society's collections by the Rev. J. F. Perry. Melanic Boarmia Gemmaria. -Mr. Sperring, extremely dark examples of Boarmia gemmaria (rhomboidaria) bred from ova, the female parent from Darenth. Confluent A. FILIPENDULE. - Mr. Tonge, confluent examples of Anthrocera filipendulae from Reigate. A GYNANDROMORPH (?) G. RHAMNI AND MELANIC H. DEFO-LIARIA.—Mr. B. S. Williams, on behalf of Mr. Wanhill, a Gonepteryx rhamni in which male and female colour were mixed on the forewings, and several melanic specimens of Hibernia defoliaria from Epping Forest. Melanic and other forms of H. Defoliaria.—Mr. Bowman, a very fine series of H. defoliaria from Epping Forest, including a dozen melanic examples, several light forms, strongly banded forms, mottled forms, etc. In the nine years previous to 1914 he had only met with two melanic forms in this locality.

September 9th.—Life-history of R. inquisitor.—Mr. Sano exhibited living larvæ, pupæ and imagines of the Longicorn Coleopteron, Rhagium inquisitor. Aberrations of Lycenide.—Mr. Leeds, underside aberrations of Agriades coridon ab. semisyngrapha, blue suffused females of Polyommatus icarus and an ab. syngrapha with very dark margins to the wings. The pylades group of Papilio.—Mr. H. Moore, imagines of the pylades group of Papilio from Africa, and read notes. A rare species of Coleoptera.—Mr. West (Greenwich), the rare Coleopteron Athous rhombus, taken at Swinley during the field meeting on July 3rd. Aberration of E. subnotata.—Mr. B. S. Williams, an aberration of Empithecia subnotata in which the mottled markings were absent, there being present on the submarginal area a series of quadrate light spots.

September 23rd.—An evening for the exhibition of Lantern-slides.— Mr. Rowan exhibited some beautiful slides illustrating the habits of birds. Mr. Tonge, the resting attitudes of the imagines of several Lepidoptera. Mr. Colthrup, the attitudes of living larve of several Lepidoptera. Mendelian and other results of Breeding.—Mr. Tonge exhibited a series of Boarmia repandata reared from Norfolk ova, the repandata-form  $\beta = 1$ ,  $\varsigma = 29$ , and conversaria-form  $\beta = 0$ ,  $\varsigma = 39$ . He also showed a series of Numeria pulreraria reared from Abbot's Wood ova, the variation was practically nil, 3 = 24, s = 27. RATION OF C. ELINGUARIA.—Mr. B. S. Williams, an aberration of Crocallis elinguaria in which the ground colour was heavily dotted with dark brown, and the central band sharply margined white. The CRUSTACEAN B. DIAPHANUS.—Mr. West (Ashtead), the freshwater Crustacean, Branchippus diaphanus, from Claygate. P. VILOSELLA. -Mr. Morford, the case of the Psychid Pachythelia rilosella from the New Forest. ABERRATION of L. Deplana.—Mr. Buckstone, a bred series of Lithosia deplana from Mickleham, one example being very smoky with rich yellow costa and ABERRATIONS OF LYCENIDS, ETC.—Mr. Leeds, many aberrations of "blues" taken this season mainly in Herts, with an Epinephele jurtina having extra ocelli on both upper and lower side, and an Agriades coridon ab. semisyngrapha from Kent.

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THE LONDON NATURAL HISTORY SOCIETY.

March 2nd, 1915.—New Member.—Mr. Herbert Loney, of 354, Goswell Road, E.C., was elected a member. The spotted fever organism.—Dr. Cockayne exhibited Diplococcus intracellalaris-meningitidis of Weickselbaury, the organism which produces epidemic cerebrospinal meningitis ("spotted fever"). Aberrations of the Genus Brenthis.—Mr. H. B. Williams, aberrant forms of Brenthis enphrosyne and Argynnis aglaia. Mr. A. W. Mera, two cabinet drawers of "fritilaries," including some fine dark forms of Brenthis selene and Argynnis adippe.

March 16th.—New Members.—Mr. W. H. A. Austen, of 102, Knightsbridge, S.W.; Prof. F. E. Hopkins, M.A., F.R.C.P., F.R.S., 71, Grange Road, Cambridge; Mr. G. T. Porritt, F.L.S., Elm Lea, Dalton, Huddersfield; and Mr. R. Worsley-Wood, M.A., Emmanuel College, Cambridge, were elected members of the Society. Lepto-CIRCUS SPECIES EXHIBITED. — Dr. Cockayne exhibited specimens of Leptocircus curius and L. libelluloides. Gynandromorph H. Marginaria, etc. -Mr. W. E. King, a gynandromorph of Hybernia marginuria, right side 2, left 3, and a series of 2 s, and a series of II. leucophaearia with ab. marmorinaria and ab. merularia, all from Chingford. ABERRATION OF A. THETIS.—Mr. C. H. Williams, a series of ♀ Agriades thetis, varying from brown with well developed marginal lunules to almost entirely blue. Collection of British Social Wasps.—Mr. C. Nicholson, a complete type collection of British social wasps, with examples of their nests, together with a comprehensive collection of insects of other orders, in illustration of a paper read by him on "Parasites, Payingguests, and Mimics of Wasps."

April 20th.—Mr. A. W. Mera exhibited spring insects from Epping Forest, including dark *Phigalia pedaria*, Apocheima hispidaria, and Hybernia leucophaearia with its ab. marmorinaria. Larve of A. ashworthii.—Mr. L. W. Newman, larve of Agrotis ashworthii from Colwyn Bay. It was pointed out by Mr. Robbins that these larve, which were feeding on sallow, began their meal by eating a hole between the midrib and the edge of the leaf. Hibernating stage of P. atalanta.—Mr. Newman stated that the larve of *Pyrameis atalanta*, taken in October, had pupated in November. The pupa had been exposed to frost and were now all alive. He suggested that this went to prove that the insect was capable of passing the winter in the pupa state, and that all early (May) specimens seen had passed the winter as pupe.

May 18th.—Discrimination of the Xanthia (sens. lat.) Larvæ.—Mr. H. Worsley-Wood exhibited the larvæ of Citria (Xanthia) fulrago and C. (X.) lutea, and pointed out the obvious distinctions in them, also larvæ of these two species together with larvæ of Ochria aurago and Xanthia occilaris in a box, all feeding on Poplar, and invited the members to divide them correctly. Aberration of P. hastiana.—Mr. G. B. Heath, a long and very varied series of Peronca hastiana, bred from larvæ collected in S. Wales in an area of twenty square yards. Aberration of P. napl.—Mr. R. W. Robbins, a ? Pieris napi with the tips of the forewings exceptionally black, and the veins covered with black scales

on the outer margins of all wings. Gynandromerh of A. Populi.—Dr. E. Cockayne. four gynandrous Amorpha populi which he had recently dissected. He remarked that the dissections seemed to illustrate a tendency for each half of the insect to produce a perfect whole. In some of the specimens certain organs showed a tendency to reduplicate, while others failed to develop altogether. Drawings of the dissected specimens were also shown. Resemblance of Pupe to surroundings.—Mr. A. W. Mera, dimorphic pupa cases of Papilio machaon and Pararge megaera to illustrate the assimilation of pupe to the colour of their surroundings. Some Gall insects.—Mr. Burkill, a visitor, showed galls of Phabdophaga salicis on Salix repens and of R. rosaciella on the same bush, from Esher, also Dasyneura sisymbrii on Nasturtium amphibium from near Bedfont. Paper.—A paper was read by Mr. A. Sich, F.E.S., on "A Hawthorn Hedge in Middlesex."

June 1st.—Aberrations of Irish P. napi.—Mr. L. W. Newman exhibited a long and varied series of Pieris napi from overwintering Irish pupæ. The series included a 2 with forewings almost entirely black, and some males approaching Pontia daplidice in upperside coloration. Mr. A. W. Mera, dark forms of Hybernia marginaria from Epping Forest. Some more gall insects.—Mr. H. J. Burkhill, galls of Urocystis riolae on Viola sylvestris from Ruislip, Andridus ramuli on Quercus robur from Esher and Oxshott, Asphilobia radicis on Q. robur Staffordshire and Surrey, and Eriophyes dispar on Populus trenula from near Claygate. Dr. Cockayne, galls of Eriophyes tri-radiatus on Salix fragilis from Golders Green. Spring Larvæ.—Mr. J. Riches, a large number of different species of spring larvæ from Epping Forest.

June 15th.—New Members.—Mr. H. J. Burkhill, of 103, Gresham House, E.C., and Mr. Vernon Stuart, of West Hill, Putney, were elected members. A special exhibition of Larvæ.—Mr. L. W. Newman showed larvæ of Entricha quercifolia, Pachygastria trifolii, Trichiura crataegi, Asteroscopus nubeculosa, Geometra vernaria, Taeniocampa populeti, Polygonia c-album, Asphalia ridens, Endromis versicolor, Tephrosia crepuscularia, Polia chi, Euchloë cardamines, Malenydris (Larentia) multistriyaria, Nyssia lapponaria, Chesias spartiata and Lobophora carpinata (lobulata). Mr. H. Worsley-Wood, Agriopis aprilina and Dyschorista fissipuncta from Abbots Wood, the larvæ of both species were infested by parasitic worms, Cleora lichenaria, Asphalia ridens, Psilura monacha, Tacniocampa munda, T. stabilis, Apocheima (Biston) hirtaria, Amathes (Orthosia) lota, Lygris testata, Poecilocampa populi, Enpithecia abbreviata, and nymphs of the Homopteron Ledra aurita beaten from oak at Bookham the previous day. Mr. F. Mann, Malacosoma nenstria and Saturnia pavonia. Mr. H. B. Williams, larvæ of Spilosoma mendica, Aglais articae, Rumicia phlaeas and Goneptery.c rhamni. Mr. A. W. Mera, larvæ of Miselia oxyacanthae, Nola cucullatella and others, and ova of Rumia crataegata. Mr. C. Nicholson, larvæ of Orgyia antiqua, Lygris testata and Euproetes chrysorrhoea. Mr. L. J. Tremayne, pupa of Epincphele jurtina (janira). Mr. C. H. Williams exhibited a series of 2 s of Polyommatus icarus, and a supposed Anaitis plagiata with the inner line entirely obsolete. Mr. H. B. Williams recorded Brenthis emphrosyne from Wimbledon Common, and Dr.

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Cockayne Abraxas sylvata (ulmata), at Abingdon on June 5th, a very early date.

September 7th.—It was announced that the President, Dr. Cockayne, had been granted a commission in the Royal Naval Volunteer Reserve, and had departed on active service. Aberrations of British Lepi-DOPTERA.—Mr. B. Cooper exhibited a fine underside variety of Plebeins acyon and a series of Satyrus semele, including some very dark males from the New Forest. Mr. C. H. Williams, a long and very varied series of Aylais articae. Mr. W. E. King, varieties of Epinephele jurtina (janira) and Coenonympha pamphilus. British Galls New to Britain.-Mr. H. J. Burkhill, a small midge gall on Epilobium angustifolium, which had not been hitherto recorded in Britain.

September 21st.—New Members.—Mr. E. A. Aris, 9, Oak Avenue, Hornsey, N., and Mr. C. S. Bayne, 7, Trafalgar Square, Chelsea, S.W., were elected members. Occurrence of the MITE T. LINTEARIUS.—Mr. L. B. Hall exhibited a colony of the red spinning mite Tetranychus lintearius, from gorse bushes on the cliffs of South Devon. British "BURNET" MOTHS.—Mr. A. W. Mera, a long and very varied series of "Burnets" with pupa cases of Anthrocera trifolii, A. filipendulae, and A. exulans, the last on heather. British Galls.—Mr. H. J. Burkhill, two rare midge galls, Perrisia salicaria on Lythrum salicaria, and Perrisia genisticola on Genista tinctoria.

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(By J. R. LE B. TOMLIN, M.A., F.E.S.) ---

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